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By- Twelker, Paul A.

INTERACTION ANALYSIS AND CLASSROOM SIMULATION AS ADJUNCT INSTRUCTION IN TEACHER EDUCATION. FINAL REPORT.

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Classroom simulation and interaction analysis are 2 new approaches to preservice observation and practicum training which involve maximum student participation in the learning experience. A 2-factor design was used to investigate the interacting effects of these 2 types of training; 92 student teachers in randomized groups received interaction analysis and/or simulation training or neither. Effects were measured with simulation tests, classroom performance records, course grades, Minnesota Teacher Attitude Inventory, Edwards Personal Preference Schedule, and Educational Testing Service Cognitive Test. Data, analyzed with standard parametric procedures, revealed that students receiving only simulation training spent more time than others in stimulation and management behaviors. The hypothesis that students in simulation training would benefit from interaction analysis training was not supported: concurrent training inhibited them from discriminating problematic cues and responding appropriately on the simulation test. Interactions between learner characteristics and training programs were largely negative. It is recommended that the study be repeated with less rigorous simulation training to more closely approximate accurate user conditions. Included are a 21-item bibliography, 112 statistical tables, methods of interaction analysis training, and Class Observation Record for supervising teachers. (JS)

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Final Report
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# Interaction Analysis and Classroom Simulation As Adjunct Instruction in Teacher Education

Paul A. Twelker

Teaching Research
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Oregon State System of Higher Education

Monmouth, Oregon

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# Chapter I

## Introduction

### Background

Many teacher-education institutions over the nation are faced with the problem of providing meaningful observation and practicum experiences for those in student teaching programs. Traditional solutions to the problem of providing effective observation experiences often are limited in that they do not enable the student to relate what he observes to what is considered effective teaching practice. The student observer frequently is given little preparation in observational techniques, and consequently has little idea of what he is to observe or the relationship of what he observes to effective pedagogy. Such observational experience is frequently looked upon by students as "busy work" with little potential for contributing to the student's preparation as a teacher.

Newer approaches to the problem of providing effective observation experiences use video tapes, kinescope recordings, or motion-picture demonstration sequences, and are effective in presenting classroom situations without interfering with ongoing instruction. However, they do not provide students training in how to observe, what to look for, and why the situation is being observed. Further, passive viewing of demonstration films and video tapes offer students little opportunity to develop perceptual skills in identifying cues from the teacher's standpoint that are characteristic of problematic classroom situations. Another limitation of conventional observation programs and televised instructional materials is that they often lack information concerning individuals in the classroom, or the classroom as a whole. In actual classroom situations, experienced teachers make decisions with the use of such information. There can be little doubt that teachers learn to react differently to different classroom groups or individuals.

In addition to providing observation experiences, some teacher-preparation programs provide a few days practicum teaching experience. Although valuable in themselves, such practicum experiences do not present a wide range of experiences that may commonly be met in usual classroom situations. Unfortunately, it is becoming increasingly difficult to provide such experiences without interfering with ongoing instructional programs. Further, it would be desirable to have a recording of the situation that could be repeated indefinitely, and stopped at any particular point in the time.

Preservice observation and practicum training should help education students in identifying behavioral cues that signal potential problems. Preservice training should provide students an opportunity for practicing a wide range of overt responses to problematic situations.

Generally, the program should provide the conceptual and procedural skills necessary for future teachers to experiment with their own teaching methods and investigate relationships between a teacher's actions and the pupils' reactions.

Recently, two instructional programs have been developed which have the potential for fulfilling, at least in part, the particular instructional requirement identified above. Each program involves the use of motion picture media for most of the training experience.

> Training in Flanders' Technique of Interaction Analysis. Flanders has used training in interaction analysis for in-service teachers to help them change their behavior on the basis of investigating the relationships between their actions and the reactions of their pupils (3). Flanders suggests that "the day may come in which education students will learn systems for quantifying spontaneous behavior. With this tool they can make more objective and reliable observations of their own behavior and the behavior of their fellow students. They may be able to explore and discover some principles of teacher influence." (3, p. 139).
> Used as a training tool, interaction analysis becomes a vehicle for teaching various types of teacher-pupil verbal interactions.
>
> Interaction analysis has been described in detail elsewhere (4). Briefly, it consists of classifying verbal communication into ten categories at an average recording rate of 20 communications per minute. Seven categories describe teacher statements, two categories describe pupil statements, and one category describes silence or confusion.
>
> Recently, a prototype training technique was developed at Teaching Research which provided students with the opportunity for practicing the recording of teacher-learner interactions in a variety of standardized classroom situations. This pilot training effort used Films of Classroom Interaction Situations (FOCIS) to teach prospective teachers to employ Flanders' technique. Five pilot training films, averaging 10 minutes in length, and a criterion film 28 minutes in length, are used. Students were introduced to interaction analysis, orientated to the method of training using FOCIS, and presented with the training films. Instruction was terminated with a test of competency using the criterion film as well as viewing actual classroom situations.

> Evidence from a pilot study indicated that FOCIS was a definite aid in teaching students to employ Flanders' technique, but that serious limitations in film quality and production existed. The developmental phase of the present project developed new FOCIS materials to replace the prototype materials.
>
> Classroom Simulation. Classroom simulation teaches students to handle problems of classroom management and control. It gives students training in identifying behavioral cues which are the occasion for decision-making by the instructor, and in responding to a wide variety of situations in a manner that does not bring embarrassment or censure to the student. A single class of pupils, "Mr. Land's Sixth Grade," is simulated for student teachers through printed descriptions of the school and community, cumulative record files describing the children, and sound motion pictures showing the children in a great variety of problematic situations. These motion pictures are filmed from the viewpoint of the teacher rather than the students or observers.
>
> Classroom simulation, as a supplement to supervised experience in the classroom, allows the student to practice new behaviors, to learn how it feels to be "tested" by the students, to try several different methods of handling a problematic situation, to actually experience how students look when they are inattentive or confused, and to learn immediately the possible consequences of his actions. The technique is not intended to be rigid in its approach, but allows students to discover ways of operating within certain behavioral objectives.

Training in interaction analysis and classroom simulation represent techniques that involve maximum student participation in the learning experience. Concern with provision for active student involvement by the student stems in part from the traditional bias of American education which emphasizes, after Dewey, learning by doing. This concern is elaborated in behavioral terms by Guthrie (6) and others. The advantage of active participation over "passive participation" represents a historical antecedent for current concern with self-instructional media that stress overt responses. Although much evidence emphasizes the importance of student involvement, laboratory experience, and the like, few improvements over the traditional lecture-recitation approach have found their way into higher education.

In 1960, the Oregon College of Education initiated a new teacher-education program that attempted to increase the involvement of student teachers in the program of instruction (the Block I program). Among other things, the following features were implemented: (1) laboratory experience that provided students with three hours per week of contact with children both in the classroom and in informal playground situations, and (2) the classroom simulation experience. More recently, students participated in training involving the Flanders' interaction analysis technique. In a recent comparison of the new program of instruction with the older "traditional" program, it was shown that students who were trained under the new program were rated reliably higher by their principal during the first year of teaching than students who were trained under the traditional program (12). From this survey, however, it was impossible to ascertain what features in the program contributed to the obtained differences.

## Objectives

One objective of the present study was to determine the effects of training college students with the two programs, classroom simulation and interaction analysis. In terms of teaching performance, course grades, or attitude toward teaching, it was not known whether training in both programs offered enough advantage over training in one or the other to warrant their combined use in teacher education programs.

The interactive effects of these two instructional experiences were of primary concern in the study. Specifically, we were concerned with the observed student-teaching performance, for example, of a group of subjects that received both classroom simulation and interaction analysis, in relation to the performance of groups receiving only one of the two programs, or neither. Would the two programs complement each other, or would the gains be simply additive?

A second purpose of the project was to examine the interactive effects of interaction analysis training on performance in classroom simulation training in particular. As noted above, classroom simulation training gives students experience in identifying behavioral cues that signal potential problems, as well as experience in responding to these problems. If a student is unable to recognize important cues and to correctly interpret the simulated episode, the probability of his responding correctly is also low. Since interaction analysis training involves students in discriminating cues and investigating teacher action-pupil reaction sequences, it is quite possible that this training would complement that given in the classroom simulation experience. It has been noted in earlier reports (17) that after simulation training, there was still room for improvement in the student teachers' post-test scores, both in terms of cue discrimination as well as responses to the filmed episodes. From this reasoning, it was hypothesized that students in simulation training would benefit from interaction analysis training.

The third purpose of the project was to determine if there existed differential responsiveness to the two instructional programs by learners having different cognitive capabilities and personalities. One requirement of an ideal curriculum is that the content and methods of instruction match well the learner characteristics--his personality, his learning style, his capabilities. Most instruction may be characterized by a standardization for all learners, and little regard is given for individual differences. Yet, instructional effectiveness may be increased if it can be shown that interactions exist between the instructional technique and individual differences. If these interactions between instructional technique and identifiable learner characteristics did exist, instructional needs could be met by two different means, one geared for students exhibiting high scores on the particular factor in question and the other for students exhibiting low scores.

## Related Research

Evidence has accumulated to show that training in interaction analysis has an effect on teaching behavior (cf., 1, 2, 21). Much less evidence is available to show that classroom simulation training has a positive effect on teaching behavior, since most of the research on classroom simulation to date has investigated fidelity of simulation, prompting, and other instructional variables. The study reported by Kersh (10) and Vlcek's doctoral dissertation (19) are the only exceptions. Vlcek's observational data show that students who have had simulation training learn instructional principles that are subsequently used in practice teaching. In Kersh's study, a supervising teacher's questionnaire asked, among other things, "How long did it take for the student teacher before he was ready to assume full responsibility for the class?" Those students who had undergone simulation training were ready to assume full responsibility three weeks earlier than a comparable group of students which did not have simulation training.

No research has been conducted that examines both interaction analysis and classroom simulation as adjunct instruction in teacher education. However, a large number of studies have concerned themselves with investigating the interactive effects of learner characteristics on various instructional techniques and methods (cf. 16). Generally, the significant interactions were found when such factors as intelligence, ability, and academic achievement were measured. Relatively less success has been obtained with individual-difference variables in the personality and motivation areas, possibly because of the lack of precision in the measurement. In the aptitude area, a cursory review of the research shows conflicting or inconclusive findings that do not permit an easy formulation of a theory regarding learner characteristics and training techniques.

# Chapter II

## Method

### Experimental Design

A two-factor design was used to study the effects of the two types of training on classroom performance, course grades, and attitude toward teaching: classroom simulation and interaction analysis. The four treatment groups were:

(1) Interaction analysis training given; simulation training given

(2) Interaction analysis training not given; simulation training given

(3) Interaction analysis training given; simulation training not given

(4) Interaction analysis training not given; simulation training not given

### Sample Plan

The subjects were undergraduate students enrolled at Oregon College of Education in the Block I program.[1] There were 92 students who originally participated in the experiment. Subjects were individually assigned at random to each of the four experimental conditions. The subjects were all under 25 years of age, and had no previous teaching experience. Some of the criterion measures reflect different ns or degrees of freedom largely because of student absence, or failure to complete criterion measures.

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[1] The "Block" program at OCE integrates or compresses class work, provides laboratory experience such as playground duty, provides classroom simulation training, and involves students in counseling sessions and individual conferences with professors.

## Materials and Procedures

Subjects were trained during the Fall term of 1966 and the Winter term of 1967. Those subjects who received simulation training were given about five hours of individualized instruction in a specially designed laboratory facility described in detail elsewhere (10, 17, 18). Subjects who received interaction analysis training were given about ten hours of instruction. Six of the ten hours were given in small group training situations and four of the ten hours were given in a large-group instructional situation. Classroom simulation and interaction analysis training were given concurrently. The specific details for each type of training are outlined below.

Classroom simulation training. Simulation training involved four phases: (1) orientation; (2) pretesting; (3) instruction; (4) post-testing. The orientation phase introduced "Mr. Land's Sixth Grade" to the students. Among other things, students were responsible for learning names of the children and the important characteristics of each child in terms of class role, academic ability, and special problem areas. The orientation used a slide-tape presentation terminated by a drill at which time various students were asked to review information previously presented. As a follow-up to the activity, students were given cumulative record folders which contained a picture of each child, achievement and health cards, anecdotal summaries of teachers' comments about each child, and a description of the school and the community. These materials were supplemented by a self-instructional program. Students were instructed to study these materials in preparation for simulation training. The final phase of orientation consisted of an experience in the laboratory facility during the first day of training, at which time students observed Mr. Land interacting with the children (on film) and during which time the students were asked to "introduce" themselves to the children. Students were asked to name the children and to review pertinent facts about each child before training began.

Prior to the first day of instruction, students were given a group pretest using one set of 16 problem episodes that make up a simulated day. Students used specially prepared response sheets to record their answers. They were asked to record what their response to each problem would be, how the response would be given, where their response would be given from in the classroom, and when the response would be given. Approximately one hour was given to complete the pretest. Rating criteria and scripts have been described elsewhere (10, 17).

At the termination of the orientation sequence, students began training which involved the showing of ten problems. Each problem sequence was repeated until students' performance reached criterion for the following objectives;

(1) Cue discrimination - The identification of salient cues or elements in the motion pictures sequence that define a particular problem;

(2) Flexibility of response - Originating of alternative responses to the projected problem;

(3) Consequence of response - The identification of the consequences of students' responses (What would be likely to happen if you did that?)

(4) Knowledge of principles - The identification of educational and psychological principles involved.

If the student did not make an acceptable response to the problem in terms of the objectives given above, prompts were given that guided his thinking without providing the answer.

One week after the termination of instruction, an individual post-test was given in the simulation facility. Post-tests presented 16 new filmed problem sequences and required students to respond to the problems in terms of the objectives listed above. The post-test took approximately two hours to administer.

At the termination of the post-test, an affectivity measure was obtained from each student by means of a Thurstone-type attitude scale. Students were also given a chance to make any comments they had about simulation training, and to suggest any improvements.

Interaction analysis training The materials and methods offered in the interaction analysis training were designed to provide; (1) filmed classroom interaction situations which approach, as nearly as possible, those that might be encountered by an observer in an actual classroom, and (2) an instructional procedure which outlines training for college-level students in the use of Flanders' system of interaction analysis. The interaction analysis package consists of seven classroom films, a teacher's manual, soundtapes of each individual film, and a packet of type-scripts for each individual film. The films include various interaction situations from several grade levels (kindergarten through sixth grade) and involves subject matter which is representative of a typical elementary classroom.

Interaction analysis training involved the following objectives;

(1) Classify and record classroom interaction behavior, according to Flanders' ten categories for interaction analysis, at the rate of 20 tallies per minute;

(2) Tally an agreement with trained observers at least 70% of the time, as measured by Scott's reliability coefficient;

(3) Demonstrate a high degree of transfer from film training to actual classroom situations, as measured by Scott's formula, when compared with expert observers;

(4) Construct a matrix using the data recorded, calculate the results and percentages, and figure I-D ratios;

(5) Interpret the data on the matrix;

(6) Identify common patterns which may appear on a matrix.

The materials and procedures used during this phase of training are described in detail in a supplement to the final report, Using Films of Classroom Interaction Situation (FOCIS) for Interaction Analysis Training: A Manual for Teachers. For convenience, portions of this supplement have been included in the present report as Appendix B. Note that training in the present project included objectives up through Part I of Interpretive and Analytical Skills (Matrix Interpretation), but did not include Part II (Altering Verbal Behavior).

## Criterion Measures

The outcome variables related to the objectives, and the experimental hypothesis stated in Chapter I, are described below:

Performance on classroom simulation post-test. Performance was measured in two ways. The assessment criterion required subjects to identify the salient cues in the motion picture test sequence that defined the particular problem. The response criterion involved the adequacy of the subjects first (and supposedly best) response to each episode.

Affectivity toward classroom simulation. A Thurstone-type attitude measure was used to measure affectivity toward the simulation training.

Actual classroom performance. Each student was required to teach a class for one week during the term following Block I training. Measures of actual classroom performance were of two types. The Supervising Teacher Observation, which was adapted from Ryans (14) is found in Appendix C. Each supervising teacher was asked to complete the evaluation while each student taught in the class. The second measure involved a 20-30 minute observation of each student while teaching. The specially designed Classroom Observation System recorded teacher behaviors under four broad categories: instruction, stimulation, management, and position change. The system also recorded student behaviors, such as disturbance, disinterest, and class disruption. These categories are defined in detail in Appendix D. Of special interest in terms of criterion measure was: (1) the amount of time spent in stimulation and management behavior after a disruption or show of disinterest on the part of students, (2) the number of occurences of teacher stimulation and management behaviors during the observational period, and (3) the number of pupil disturbances during the observation.

Course grades. Final course grades in the Block I program were used as a measure of performance.

Attitude toward teaching. The Minnesota Teacher Attitude Inventory was used to measure the subjects' attitude toward teaching, school work, and children. The MTAI is "designed to measure those attitudes of a teacher which predict how well he will get along with pupils in interpersonal relationships, and indirectly how well satisfied he will be with teaching as a vocation" (13, p. 3).

### Learner Characteristics Measures

Twenty-six different measures were obtained from the subjects. Ten of these represented factors from the ETS Cognitive Test Battery, and sixteen of the measures represented the different factors on the Edwards Personal Preference Schedule. Specifically, the aptitude measures taken were:

(1) speed of closure
(2) syllogistic reasoning
(3) induction
(4) spatial scanning

(5) perceptual speed
(6) visualization
(7) ideational fluency
(8) figural adaptive flexibility
(9) originality (High)
(10) originality (Low)

The sixteen factors on the Edwards Personal Preference Schedule are:

(1) achievement
(2) deference
(3) order
(4) exhibition
(5) autonomy
(6) affiliation
(7) intraception
(8) succorance
(9) dominance
(10) evasement
(11) nutrance
(12) change
(13) endurance
(14) heterosexuality
(15) agression
(16) consistency

Appendix E contains detailed explanations of each cognitive and personality factor mentioned above.

# Chapter III

## Results

### Methods of Analysis

The data were analyzed with standard parametric procedures such as analysis of variance and individual comparison tests. Since administrative problems made it impossible to insure that each treatment group had an equal number of subjects, the general linear hypothesis model (8, pp. 234-251) was used to avoid arbitrarily eliminating subjects to equalize cell ns and to gain accurate estimates of the main and interactional effects of treatment variables. To gain accurate estimates of simple effects and differences between individual groups in cases of statistically significant interactions, the Newman-Kuels procedure was used (cf., 19, pp. 210-211; 238-239; 80-85). All tables are presented in Appendix A.

### Simulation Post-Test Assessment Criterion

Examination of Tables A1 and A2 shows that the main effects due to Simulation and Interaction Analysis were not statistically significant, but that the interaction effect was significant ($p < .05$). Figure 1 aids in the interpretation of the S x IA interaction. It is clear that the best performance occurred when interaction analysis training was given without simulation training. It is also evident that the worst performance occurred when the two types of training were given concurrently. It should be noted that the hypothesized positive effects of training students with both classroom simulation and interaction analysis did not occur; indeed, concurrent training somehow inhibited students from discriminating problematic cues on the simulation test.

### Simulation Post-Test Response Criterion

Examination of Tables A3 and A4 reveals that the S x IA interaction effect was statistically significant ($p < .01$). Figure 2 shows that students who received only interaction analysis training or only simulation training scored high on this measure, while students receiving both types of training, or neither type of training scored low. Again, the hypothesized beneficial effects of concurrent training on this measure was not supported. Note that the group receiving both types of training scored no better than the group receiving neither training program.

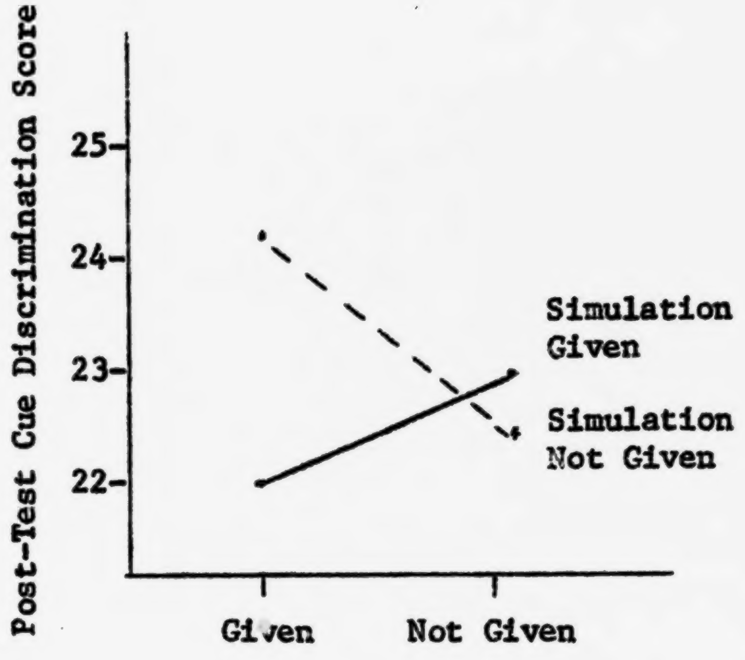

Figure 1. Profiles of means showing the simulation x interaction analysis interaction. The dependent variable is the simulation post-test assessment (cue discrimination) criterion. (The main effects were not significant.)

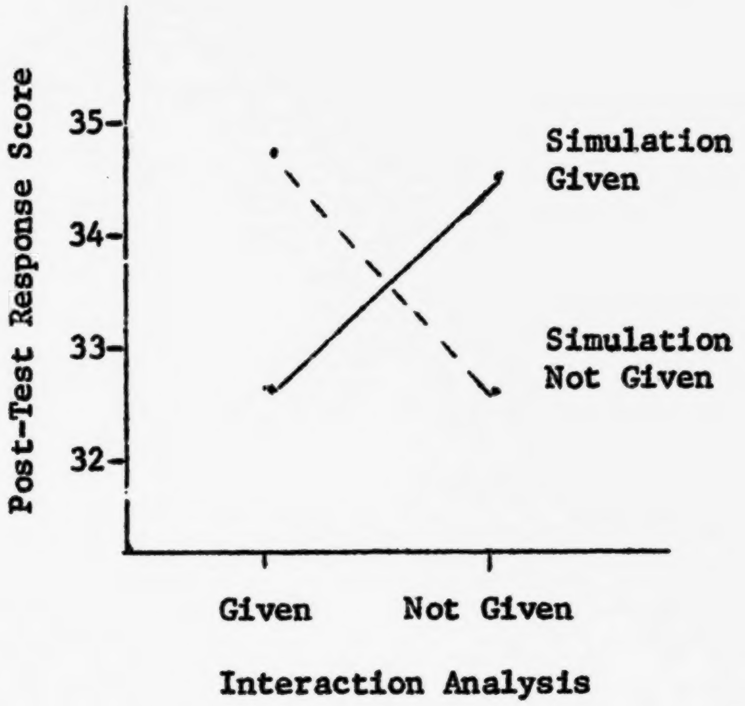

Figure 2. Profiles of means showing the simulation x interaction analysis interaction. The dependent variable is the simulation post-test response criteria. (The main effects were not significant.)

## Affectivity Toward Classroom Simulation

Data presented in Tables A5 and A6 reveal that the main effect due to interaction analysis and the S x IA interaction were statistically significant ($p < .05$). Figure 3 reveals that students who did not receive simulation training, but only received the orientation, pretest and post-test experiences, exhibited poorer attitudes towards simulation training than students receiving either simulation training, interaction analysis training, or both.

## Time Spent in Stimulation and Management Behaviors During Student Teaching Observation

Examination of Tables A7 and A8 reveals that the S x IA interaction was statistically significant ($p < .05$). The group receiving simulation training only spent significantly greater amounts of time in stimulation and management behaviors than did the groups receiving either both types of training or neither type of training (see Figure 4).

## Number of Occurrences of Teacher Stimulation and Management Behavior During Student Teaching Observation

Examination of Tables A9 and A10 reveals no statistically significant differences ($p > .05$). However, it is too tempting not to point out that the S x IA interaction ($p < .10$) exhibits the same pattern as the interaction discussed immediately above; that is, simulation training resulted in a larger number of occurrences of teacher stimulation and management behaviors than either interaction analysis training alone, concurrent training of interaction analysis and simulation, or neither type of training.

## Number of Pupil Disturbances During Student Teaching Observation

The data presented in A11 and A12 reveal no statistically significant differences for either main effect or the interaction effect ($p > .05$).

## Supervising Teacher Observation

Data from the classroom observation record adapted from Ryans are summarized in Tables A13 through A56. With the exception of the Obstructive-Responsible Pupil Behavior scale, no statistically significant differences were detected. Examination of Tables A15 and A16

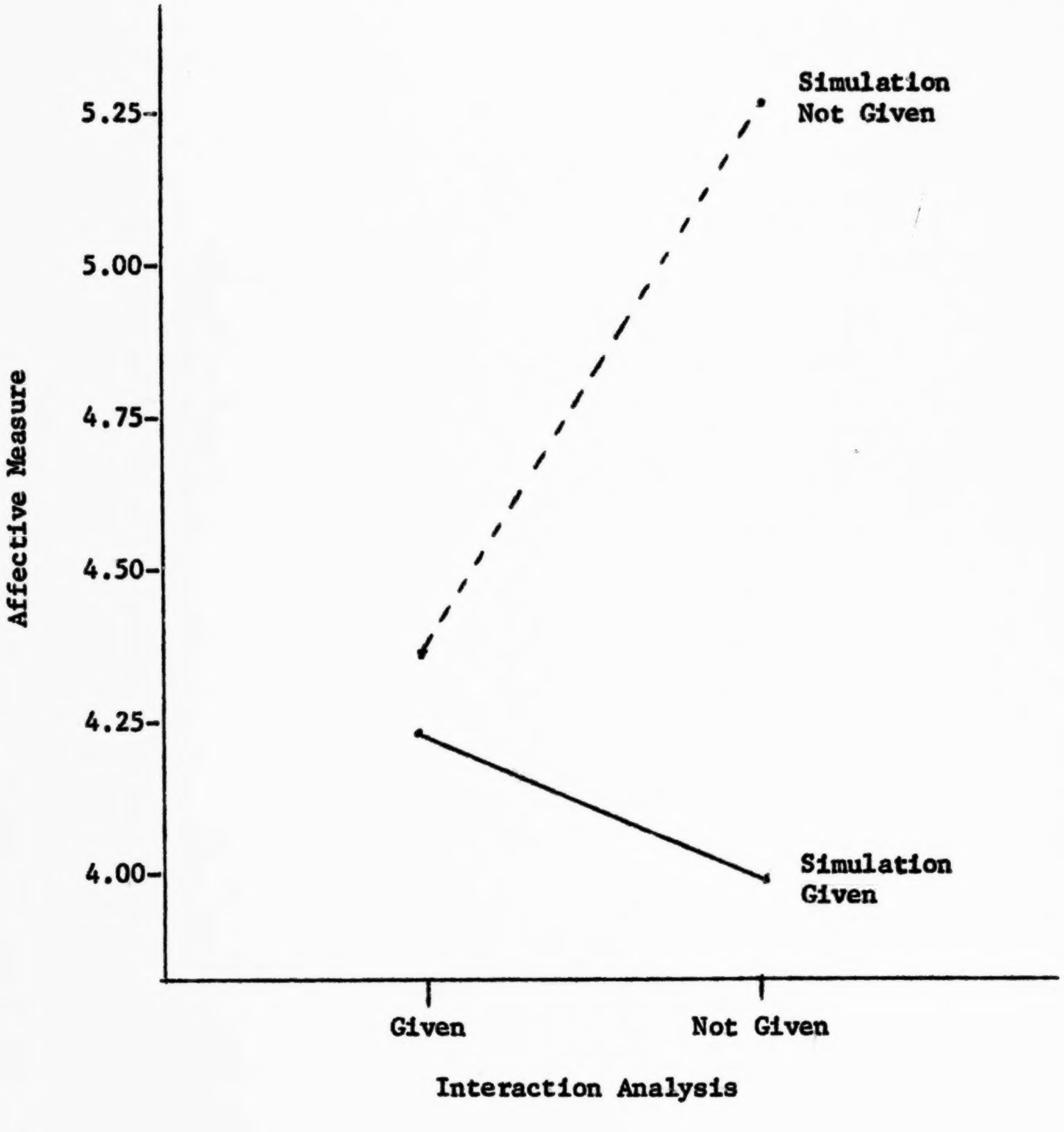

Figure 3. Profiles of means showing the simulation x interaction analysis interaction. The dependent variable is the simulation affectivity measure. (A higher score indicates a more negative attitude.)

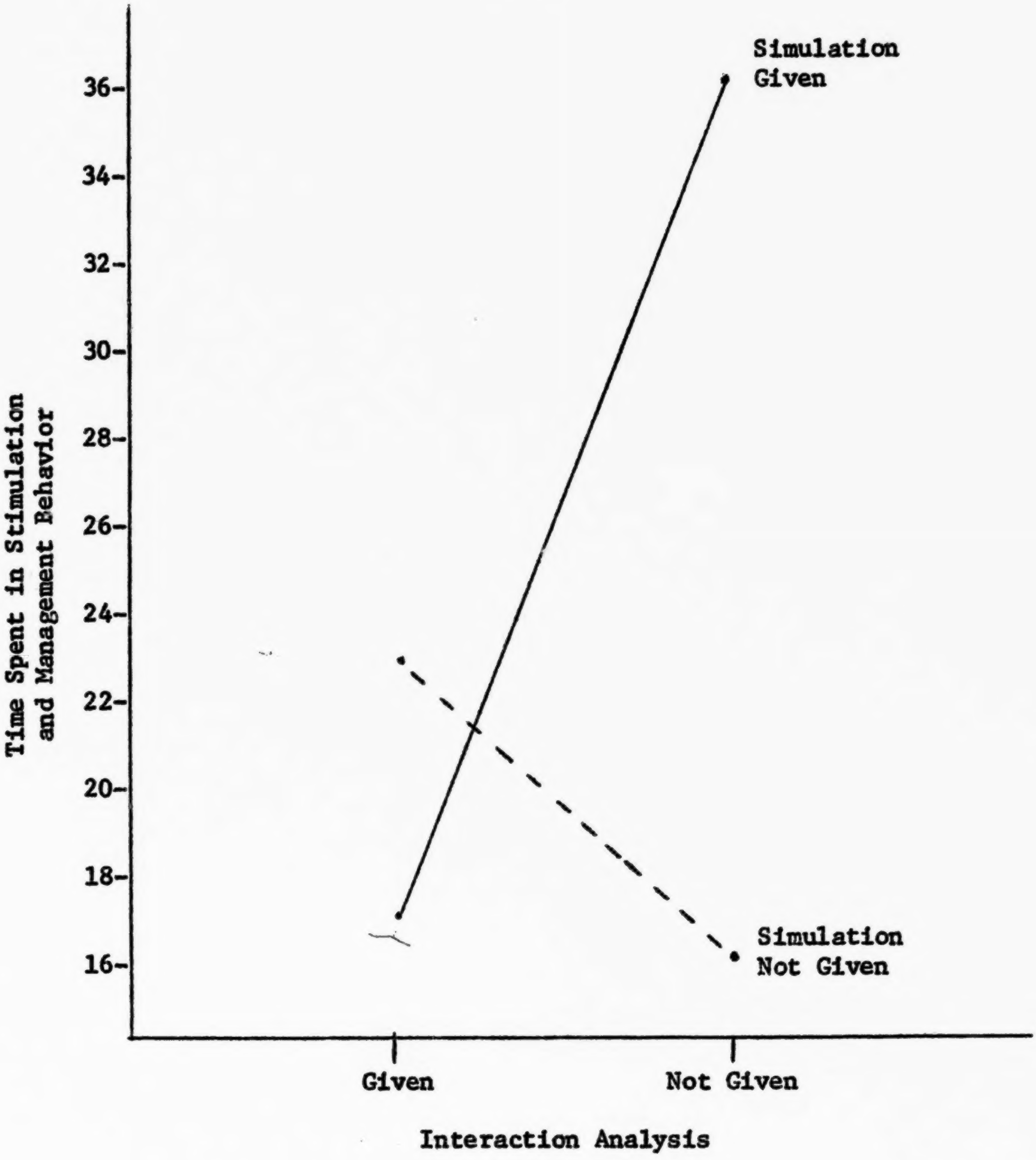

Figure 4. Profiles of means showing the simulation x interaction analysis interaction. The dependent variable is the time spent in stimulation and management behavior during student teaching observation.

reveal that for that one scale, pupils who were taught by student teachers given interaction analysis training were scored by the supervising teacher as more obstructive than pupils taught by student teachers not given interaction analysis training ($p < .05$).

## Course Grades

Examination of Tables A57 and A58 reveal that no statistically significant differences were found on this measure.

## Minnesota Teacher Attitude Inventory

Tables A59 and A60 reveal no statistically significant differences on the Minnesota Teacher Attitude Inventory. Evidently, the presentation of the two innovations, either by themselves or in combination, did not affect those attitudes of a teacher toward teaching, school work, and children.

## Interaction Between Instructional Technique and Learner Characteristics

The total sample of subjects were divided into two groups on each of the cognitive and personality characteristics. Separate analyses of variance were conducted using a two-way factorial design. The two factors were: (1) test level and (2) treatment method. The dependent variable was the time spent in stimulation and management behaviors during student teaching.

The 26 analyses of variance, together with tables of means, are presented in Tables A61 through A112. These analyses revealed only one significant interaction effect (see Figure 5). On the abasement factor of the EPPS, low scoring subjects who received only simulation training took significantly more time than all other subjects ($p < .05$).

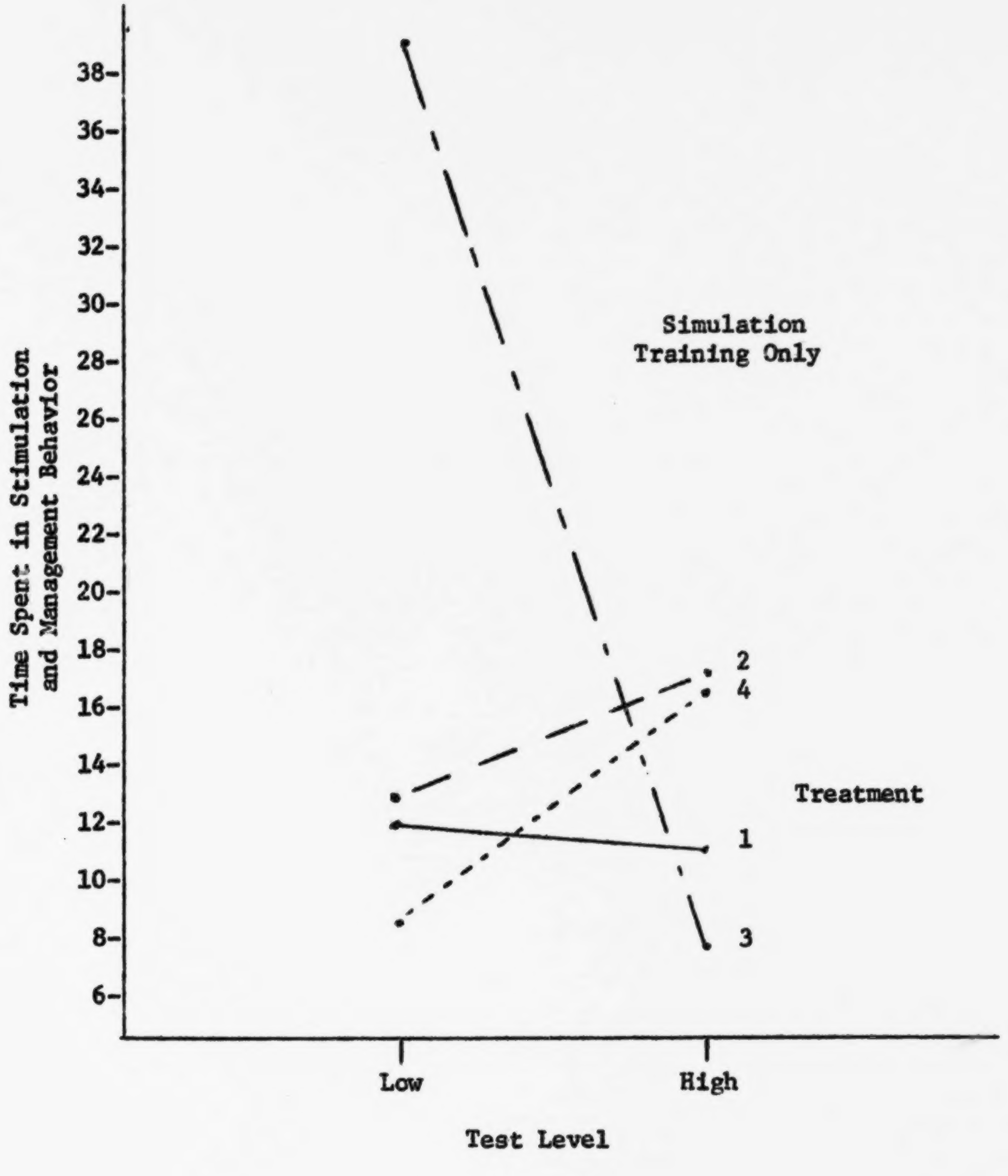

Figure 5. Profiles of means showing the treatment x level interaction. The dependent variable is the time spent in stimulation and management behavior. The blocking factor is the abasement variable on the EPPS.

# Chapter IV

## Discussion

The present investigation examined two instructional innovations, classroom simulation, and interaction analysis in relation to three questions. 1) What are the effects of training college students with the two programs in terms of teaching performance, course grades, and attitude toward teaching? 2) What are the interactive effects of interaction analysis training on classroom simulation training? 3) Are there interactions between learner characteristics and training program? In the second case, it was hypothesized that students in simulation training would benefit from interaction analysis training since it increases practice opportunities for discriminating cues and investigating teacher action-pupil reaction sequences that would in turn increase appropriate decision-making capabilities.

Interesting data were presented in answer to the first question. During student teaching, it was observed that students who received simulation training only spent significantly greater amounts of time in stimulation and management behaviors than did students receiving either both types of training or neither type of training. More time spent in stimulation and management behaviors during instruction may be interpreted both negatively or positively. If one places value on instructional time being high in relation to time spent in stimulation and management, then the measure indeed infers a negative effect. The data would indicate that those who had simulation training spent less time in instructional activities and more time in management and stimulation activities, in relation to the other treatments. On the other hand, many teacher educators are also interested in the affective domain as well as the cognitive domain, and might interpret the measure differently. These individuals would say that time spent in management and stimulation behaviors might involve, in part, dealing with children's needs, care-taking, accepting feelings, and other constructive behaviors. It would seem that simulation training might have made these students more aware of the affective domain so that they spent more time in management and stimulation behaviors. Of course, the alternative interpretation is that the students, after simulation training, were simply not capable of handling the pupil disruption and disinterest behavior efficiently and effectively. Unfortunately, the data neither support nor reject these interpretations. Had a more sophisticated observational system been used, such as The Teaching Research Observational System (15), perhaps the question could have been answered more definitively.

Data from the supervising teacher observation revealed only one statistically significant difference. On the obstructive-responsible pupil behavior scale, pupils who were taught by student teachers given interaction analysis training were scored by the supervising teacher as more obstructive than pupils taught by student teachers not given interaction analysis training. Components of obstructive behavior include rudeness to one another and to the teacher, interrupting, demanding attention, disturbing, being obstinate and refusing to participate, being quarrelsome, unprepared, and so forth. Note that these pupil behaviors represent situations that demand the teacher's intervention, in terms of stimulation and management behaviors. Yet, as measured by the classroom observational system, there were no differences between groups in the number of pupil disturbances during the student teaching observation. Perhaps the supervising teachers were rating their pupils more on the basis of behaviors they usually exhibited rather than behaviors they exhibited during the student-teacher observation.

In regard to the second question and the hypothesis that students in simulation training would benefit from interaction analysis training, data indicated that concurrent training resulted in poor performance. On the simulation post-test assessment criterion, the best performance occurred when interaction analysis training was given without simulation training. The worst performance occurred when the two types of training were given concurrently. Further, on the simulation post-test response criterion, students who received only interaction analysis training or only simulation training scored high on this measure, while students receiving both types of training or neither type of training scored low. Concurrent training somehow inhibited students from discriminating problematic cues and responding appropriately on the simulation test. Further, interaction analysis training somehow produced performance as good or better than simulation training on the simulation criterion tests.

Looking at the assessment criterion, it is conceivable that interaction analysis training might produce good performance since training involved students in distinguishing types of teacher-learner interactions in filmed classroom situations. Students might receive ample opportunity in identifying pupil actions that signal potential problems. But why did concurrent training of classroom simulation and interaction analysis training seemingly inhibit performance on this criterion? This writer does not believe that interaction analysis training per se produced inferior performance for those students who had simulation training. An alternative interpretation is favored--the students were overloaded. That is, the burden of some ten or fifteen hours of instruction over and above that usually encountered in the Block I program resulted in a negative attitude toward training which was reflected in the simulation test which happened to have been given late in the term after both training experiences. Students who had simulation training were required to complete numerous cognitive batteries and personality tests, as well as "endure" a rather tedious simulation training mode that was dictated by another concurrent research project. Reports from Oregon College of Education faculty revealed that the students had many complaints about the time-consuming simulation training program, as described in Chapter II. This writer feels that those students who had both types of training simply were "fed-up" and this revealed itself in the simulation post-test scores.

The findings of the research in regards to the interactions between learner characteristics and training programs were largely negative. Only one interaction was significant, and this interaction involved the EPPS variable, abasement. Abasement is defined as feeling guilty when one does something wrong, to accept blame when things do not go right, to feel depressed by inability to handle situations, and to feel timid in the presence of superiors, among other things. Subjects who received simulation training and who exhibited a low abasement score took significantly more time in stimulation and management behaviors than other subjects. It is easy to see how students with low abasement scores might tend to take longer in handling management problems as they arise in the classroom since they do not feel guilty for their happening. Rather, they might tend to take the necessary time to stimulate an erring student, perform "caretaking" activities, and so forth. What is not at all apparent is how the training program interacts with the test level. Why should only those low-scoring abasement subjects who received simulation training only, take longer amounts of time in stimulation and management behaviors? If classroom simulation made these students more competent classroom managers, then why did simulation training combined with interaction analysis training not produce similar results? Mention has been made above of the negative results of concurrent training (under the conditions of this experiment), and this author offers no further answer. The implication of these data is interesting, however. There is no evidence that any combination of training methods produces high amounts of stimulation and management behaviors among subjects with high abasement scores.

In light of the several published studies that reported significant interactions between training method and learner characteristics, the largely negative findings (25 of 26 analyses showed no significant interactions) were disappointing. The lack of significant interactions may have been a function of the nature of the experimental treatments. Intuitively, one might not expect learner characteristic interactions among the four treatment combinations that represented two rather distinct training programs, with decidedly different objectives. It is quite a different thing to compare training methods with similar objectives (cf., 16), and hypothesize interactions with learner characteristics. In any event, the fact that the two training programs did accomplish similar outcomes (see Results chapter) does not mean that interactions might be expected to occur. It must be concluded that the expectation of significant interactions was probably ill-founded.

## Chapter V

## Conclusions, Implications and Recommendations

Evidence revealed that negative effects on simulation post-test performance resulted from concurrent instruction with classroom simulation and interaction analysis. These results were discussed in terms of "overloading" on the part of the subjects and their negative reactions to the research project. It is recommended that the study be repeated under conditions that would permit a less rigorous research program of simulation training so that any beneficial effects of concurrent training may be tested under conditions that more closely approximate actual "user-conditions."

The data also revealed that the students' classroom behavior is influenced by training with the two instructional programs. More time is spent in management and stimulation behaviors during student teaching when simulation training alone is given in comparison with giving both types, or neither type, of training. Whether or not the effects are negative or positive depends on the interpretation given to the findings. It remains to be seen whether a more sophisticated measure could determine whether this time spent was beneficial or detrimental for the pupils. It is reasonable to recommend that the study be repeated using the Teaching Research Observational System developed by Schalock (15). In this manner, a more detailed description of classroom activities could be secured that would permit an accurate interpretation of the data.

It is difficult to draw implications from the study, especially in the form of recommendations to an institution such as Oregon College of Education, who is currently involved in using these materials. The limitations described above are just too salient to carelessly suggest that one or the other training program be discontinued. Intuitively, both programs have great appeal. They involve students in a training program that provides active participation in realistic situations without the problems usually encountered in actual classroom practical and observational experiences. Yet, it is clear that in order for the effect of these programs on the students to be accurately assessed, they must be incorporated into the overall instructional curriculum rather than being added on and thereby overloading the students.

In regards to the interaction analysis training, a question persists which was not tested in the present investigation. Are actual observations, motion pictures of classrooms, tape recordings, or type scripts, most suitable for training students to use the interaction analysis technique? How much fidelity is required in the instructional materials to train interaction analysis? In the present project, the latter three modes were used, depending on the stage of training and the objectives. Recent attempts to train prospective educators in the use of interaction analysis have included tape presentation of classroom situations, or actual classroom observations by the trainees. Both of these systems seem to present difficulties. The actual classroom observation, although highly desireable, is often not practical because of a lack of classrooms, scheduling difficulties, and other similar problems. Using tape presentations of classroom situations, many of the difficulties of actual classroom observation are alleviated. However, tape presentations may fail to communicate many of the potentially important discrimination cues present in the actual classroom situation. These cues involve the visual cues which accompany the auditory cues. The visual cues may often be vital to the interpretation of the interaction which occurs in the classroom. With the taped presentation, the trainee must rely solely upon auditory cues as a base for classification of classroom interaction behaviors.

For example, the interaction pattern such as, "Bill, did you have something further to add? Yes, I think .... " may be categorized from tape as a teacher question (category four) followed by a student teacher -- initiated response (category eight). In an actual classroom situation, such an interaction pattern could be categorized as a teacher direction followed by a student self-initiated response for categories six and nine. In this case, the teacher may have called on individuals who have expressed a desire to respond by raising their hand. Thus, by the teacher calling on the student, the teacher is indicating that the student may speak at that time.

The question that remains is whether the loss in fidelity with using tape recordings in comparison with motion pictures is crucial enough to warrant using the more realistic medium. The Films of Classroom Interaction Situations were developed on the premise that fidelity was important in training Flanders' Technique of Interaction Analysis, and even more important in the training of more complicated systems such as the Teaching Research Observation Syetem. In the latter case, it has been reported by the staff that color film makes observation more accurate in comparison with black and white films since cues may be more easily identified.

It is recommended that a research effort be mounted that investigates the problem of fidelity as it pertains to observational system instruction. It should be determined whether visual cues are an important element in classifying the social interactions that occur in the classroom. The investigation should look at various observational systems in light of the fidelity question.

# Chapter VI

## Summary

The purpose of the present investigation was to examine two adjunct instructional programs for teacher education: classroom simulation training and interaction analysis training. Those programs are characterized by maximum involvement of students in the learning experience. The first involves a special kind of training that gives the students an opportunity to learn to identify behavioral cues that are the occasion for decision-making by the instructor and to respond to these situations in a variety of ways. The second program provides the students with the means of classifying teacher-learner verbal interactions in the classroom situation.

Three questions were raised by the study: 1) What are the effects of training college students with the two techniques described above, in terms of teaching performance, course grades, and attitude toward teaching? 2) What are the interactive effects of interaction-analysis training on the classroom simulation training? 3) Are there interactions between learner characteristics and training program? For the second question, it was hypothesized that students in simulation training would benefit from interaction analysis training since it increased practice opportunities for discriminating cues and investigating teacher action-pupil reaction sequences that would in turn increase appropriate decision-making capabilities.

### Method

A two-factor design was used to study the two types of training. Classroom simulation (given or not given) was along one dimension and interaction analysis training (given or not given) was along the other dimension. There were ninety-two subjects who were individually assigned to each of the four experimental conditions. Subjects who received simulation training were given about five hours of individualized instruction, while subjects who received interaction analysis training were given about ten hours of instruction. The outcome variables included: 1) performance on a classroom simulation test; 2) affectivity toward classroom simulation; 3) actual classroom performance; 4) course grades; 5) attitude toward teaching. To assess the interactive effects of instructional program and learner characteristics, twenty-six different measurements representing cognitive and personality factors were obtained.

## Results

The data were analyzed with standard parametric procedures such an analysis of variance and individual comparison tests. In regards to the first question, data reveal that during student teaching, students who received simulation training only spent significantly greater amounts of time in stimulation and management behaviors than did students receiving either both types of training or neither type of training. If one places value on instructional time being high in relation to time spent in stimulation and management, then the measure infers a negative effect. The data would indicate that those who had simulation training spent less time in instructional activities and more time in management activities. On the other hand, if one places value on the affective domain that is a part of stimulation and management behavior, then the measure might infer a positive effect.

In regard to the second question and the hypothesis that students in simulation training would benefit from interaction analysis training, data indicated that interaction analysis training has an inhibitory effect. Concurrent training somehow inhibited students from discriminating problematic cues and responding appropriately on the simulation test. These data were explained in terms of student overloading and negative attitude toward training.

The findings of the research in regards to the interactions between learner characteristics and training programs were largely negative. Only one interaction was significant. On the abasement factor of the EPPS, low scoring subjects who received only simulation training took significantly more time than all other subjects on stimulation and management behaviors during student teaching.

It was recommended that the study be repeated under conditions that would permit a less rigorous program of simulation training so that any beneficial effects of concurrent training may be tested under conditions that more closely approximate accurate "user-conditions." The findings were also discussed in terms of the fidelity of the training media. A question remains to whether actual observations, motion pictures of classrooms, tape recordings, or typed scripts, are most suitable for training students to use the interaction analysis technique. The Films of Classroom Interaction Situations were developed on the premise that fidelity was important in training Flanders' technique of interaction analysis and even more important in the training of more complicated systems such as the Teaching Research Observation System. It was recommended that a research effort be mounted that investigates the problem of fidelity as it pertains to observational system instruction.

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# APPENDIX A

## Tables

## Table A1

### Treatment Group Means for the Simulation Post Test Assessment Criterion

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 22.00 | 22.95 | 22.50 |
| Not Given | 24.15 | 22.60 | 23.28 |
| Combined | 23.04 | 22.77 | ----- |

## Table A2

### Summary of the Analysis of Variance for the Simulation Post Test Assessment Criterion

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 13.84 | 2.13 |
| Interaction Analysis (IA) | 1 | 1.70 | ---- |
| S x IA | 1 | 35.04 | 5.40* |
| Error | 86 | 6.48 | ---- |

* $p < .05$

## Table A3

## Treatment Group Means for the Simulation Post Test Response Criterion

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 32.71 | 34.60 | 33.63 |
| Not Given | 34.78 | 32.68 | 33.69 |
| Combined | 33.80 | 33.53 | ----- |

## Table A4

## Summary of the Analysis of Variance for the Simulation Post Test Response Criterion

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 0.12 | .01 |
| Interaction Analysis (IA) | 1 | 0.26 | .03 |
| S x IA | 1 | 87.84 | 9.28 ** |
| Error | 85 | 9.46 | ---- |

** $p < .01$

## Table A5

### Treatment Group Means for the Simulation Affectivity Score

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 4.26 | 4.04 | 4.29 |
| Not Given | 4.32 | 5.22 | 4.66 |
| Combined | 4.14 | 4.87 | ---- |

## Table A6

### Summary of the Analysis of Variance for the Simulation Affectivity Score

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 2.40 | 1.65 |
| Interaction Analysis (IA) | 1 | 8.25 | 5.67* |
| S x IA | 1 | 6.70 | 4.61* |
| Error | 83 | 1.45 | ---- |

* $p < .05$

## Table A7

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors During Student Teaching Observation

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 17.47 | 36.00 | 20.14 |
| Not Given | 23.23 | 16.33 | 25.59 |
| Combined | 27.03 | 19.23 | ----- |

## Table A8

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behaviors During Student Teaching Observation

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 517.47 | 1.16 |
| Interaction Analysis (IA) | 1 | 738.71 | 1.66 |
| S x IA | 1 | 2471.76 | 5.44* |
| Error | 58 | 445.83 | ---- |

* $p < .05$

## Table A9

## Treatment Group Means for the Number of Occurances of Teacher Stimulation and Management Behaviors During Student Teaching Observation

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.07 | 9.13 | 5.45 |
| Not Given | 5.86 | 4.47 | 6.66 |
| Combined | 7.10 | 5.10 | ---- |

## Table A10

## Summary of the Analysis of Variance for the Number of Occurances of Teacher Stimulation and Management Behaviors During Student Teaching Observation

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 27.25 | .86 |
| Interaction Analysis (IA) | 1 | 56.89 | 1.79 |
| S x IA | 1 | 112.82 | 3.54 |
| Error | 57 | 31.84 | ---- |

## Table A11

## Treatment Group Means for the Number of Pupil Disturbances During Student Teaching Observation

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 8.06 | 9.65 | 7.41 |
| Not Given | 6.75 | 9.26 | 9.44 |
| Combined | 8.88 | 8.11 | ---- |

## Table A12

## Summary of the Analysis of Variance for the Number of Pupil Disturbances During Student Teaching Observation

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 71.01 | .87 |
| Interaction Analysis (IA) | 1 | 12.17 | .15 |
| S x IA | 1 | 3.65 | .05 |
| Error | 64 | 81.24 | ---- |

### Table A13

### Treatment Group Means for the Apathetic-Alert Pupil Behavior Scale on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.67 | 5.93 | 5.93 |
| Not Given | 6.25 | 5.65 | 5.78 |
| Combined | 5.80 | 5.90 | ---- |

### Table A14

### Summary of the Analysis of Variance for the Apathetic-Alert Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .41 | .35 |
| Interaction Analysis (IA) | 1 | .32 | .27 |
| S x IA | 1 | 2.74 | 2.34 |
| Error | 55 | 1.17 | ---- |

## Table A15

### Treatment Group Means for the Obstructive-Responsible Pupil Behavior on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 4.62 | 5.20 | 5.17 |
| Not Given | 5.82 | 5.47 | 5.34 |
| Combined | 4.93 | 5.61 | ---- |

## Table A16

### Summary of the Analysis of Variance for the Obstructive-Responsible Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .19 | .12 |
| Interaction Analysis (IA) | 1 | 7.40 | 4.73* |
| S x IA | 1 | 2.96 | 1.89 |
| Error | 52 | 1.56 | ---- |

* $p < .05$

Table A17

Treatment Group Means for the Uncertain-Confident Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.80 | 5.73 | 5.78 |
| Not Given | 5.75 | 5.59 | 5.66 |
| Combined | 5.77 | 5.66 | ---- |

Table A18

Summary of the Analysis of Variance for the Uncertain-Confident Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .19 | .19 |
| Interaction Analysis (IA) | 1 | .14 | .14 |
| S x IA | 1 | .03 | .03 |
| Error | 55 | .98 | ---- |

## Table A19

## Treatment Group Means for the Dependent-Initiating Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.43 | 5.36 | 5.54 |
| Not Given | 5.67 | 5.71 | 5.55 |
| Combined | 5.39 | 5.69 | ---- |

## Table A20

## Summary of the Analysis of Variance for the Dependent-Initiating Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .00 | .00 |
| Interaction Analysis (IA) | 1 | 1.21 | 1.26 |
| S x IA | 1 | .04 | .05 |
| Error | 53 | .96 | ---- |

Table A21

Treatment Group Means for the Partial-Fair Teacher Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.53 | 6.13 | 5.77 |
| Not Given | 6.09 | 6.00 | 6.06 |
| Combined | 5.84 | 6.04 | ---- |

Table A22

Summary of the Analysis of Variance for the Partial-Fair Teacher Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .90 | .72 |
| Interaction Analysis (IA) | 1 | .67 | .54 |
| S x IA | 1 | 1.67 | 1.34 |
| Error | 55 | 1.24 | ---- |

## Table A23

### Treatment Group Means for the Automatic-Democratic Teacher Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.27 | 5.69 | 5.60 |
| Not Given | 6.10 | 5.76 | 5.73 |
| Combined | 5.48 | 5.89 | ---- |

## Table A24

### Summary of the Analysis of Variance for the Automatic-Democratic Teacher Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .03 | .02 |
| Interaction Analysis (IA) | 1 | 2.88 | 2.42 |
| S x IA | 1 | 1.99 | 1.67 |
| Error | 54 | 1.19 | ---- |

Table A25

Treatment Group Means for the Aloof-Responsive Teacher Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.67 | 5.88 | 5.89 |
| Not Given | 6.17 | 5.82 | 5.85 |
| Combined | 5.77 | 5.97 | ---- |

Table A26

Summary of the Analysis of Variance for the Aloof-Responsive Teacher Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .07 | .07 |
| Interaction Analysis (IA) | 1 | .74 | .75 |
| S x IA | 1 | 1.12 | 1.14 |
| Error | 56 | .99 | ---- |

## Table A27

### Treatment Group Means for the Restricted-Understanding Teacher Behavior on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.79 | 5.94 | 5.96 |
| Not Given | 6.18 | 5.59 | 5.76 |
| Combined | 5.87 | 5.82 | ---- |

## Table A28

### Summary of the Analysis of Variance for the Restricted-Understanding Teacher Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .69 | .68 |
| Interaction Analysis (IA) | 1 | .01 | .01 |
| S x IA | 1 | 1.96 | 1.92 |
| Error | 54 | 1.02 | ---- |

## Table A29

### Treatment Group Means for the Harsh-Kindly Teacher Behavior on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 6.00 | 6.13 | 6.20 |
| Not Given | 6.45 | 6.12 | 6.12 |
| Combined | 6.07 | 6.25 | ---- |

## Table A30

### Summary of the Analysis of Variance for the Harsh-Kindly Teacher Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .16 | .19 |
| Interaction Analysis (IA) | 1 | .71 | .82 |
| S x IA | 1 | .75 | .88 |
| Error | 54 | .86 | --- |

Table A31

Treatment Group Means for the Dull-Stimulating Pupil Behavior Scale on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.40 | 4.94 | 5.44 |
| Not Given | 5.50 | 5.59 | 5.27 |
| Combined | 5.16 | 5.55 | ---- |

Table A32

Summary of the Analysis of Variance for the Dull-Stimulating Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .52 | .36 |
| Interaction Analysis (IA) | 1 | 2.08 | 1.46 |
| S x IA | 1 | 1.12 | .79 |
| Error | 56 | 1.42 | ---- |

### Table A33

### Treatment Group Means for the Stereotyped-Original Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.20 | 5.44 | 5.30 |
| Not Given | 5.42 | 5.53 | 5.48 |
| Combined | 5.32 | 5.48 | ----- |

### Table A34

### Summary of the Analysis of Variance for the Stereotyped-Original Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .45 | .35 |
| Interaction Analysis (IA) | 1 | .35 | .27 |
| S x IA | 1 | .06 | .04 |
| Error | 56 | 1.31 | --- |

### Table A35

### Treatment Group Means for the Apathetic-Alert Pupil Behavior Scale on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.40 | 5.75 | 5.67 |
| Not Given | 6.00 | 5.88 | 5.82 |
| Combined | 5.58 | 5.93 | ---- |

### Table A36

### Summary of the Analysis of Variance for the Apathetic-Alert Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .20 | .17 |
| Interaction Analysis (IA) | 1 | 1.98 | 1.72 |
| S x IA | 1 | .81 | 70 |
| Error | 56 | 1.15 | ---- |

### Table A37

### Treatment Group Means for the Unimpressive-Attractive Pupil Behavior Scale on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 6.27 | 6.06 | 6.26 |
| Not Given | 6.25 | 6.18 | 6.12 |
| Combined | 6.16 | 6.21 | ---- |

### Table A38

### Summary of the Analysis of Variance for the Unimpressive-Attractive Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .28 | .39 |
| Interaction Analysis (IA) | 1 | .04 | .05 |
| S x IA | 1 | .06 | .09 |
| Error | 56 | .72 | --- |

Table A39

Treatment Group Means for the Evading-Responsible Pupil Behavior Scale on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.80 | 5.81 | 5.85 |
| Not Given | 5.92 | 6.06 | 5.94 |
| Combined | 5.81 | 6.00 | ---- |

Table A40

Summary of the Analysis of Variance for the Evading-Responsible Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .09 | .09 |
| Interaction Analysis (IA) | 1 | .49 | .48 |
| S x IA | 1 | .06 | .06 |
| Error | 56 | 1.01 | --- |

## Table A41

## Treatment Group Means for the Erratic-Steady Pupil Behavior Scale on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.80 | 6.19 | 5.96 |
| Not Given | 6.17 | 6.00 | 6.09 |
| Combined | 6.00 | 6.07 | ---- |

## Table A42

## Summary of the Analysis of Variance for the Erratic-Steady Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .18 | .19 |
| Interaction Analysis (IA) | 1 | .12 | .13 |
| S x IA | 1 | 1.13 | 1.21 |
| Error | 56 | .94 | ---- |

## Table A43

### Treatment Group Means for the Excitable-Poised Pupil Behavior Scale on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.47 | 5.88 | 5.67 |
| Not Given | 5.92 | 5.94 | 5.91 |
| Combined | 5.68 | 5.93 | ----- |

## Table A44

### Summary of the Analysis of Variance for the Excitable-Poised Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .69 | .82 |
| Interaction Analysis (IA) | 1 | .98 | 1.16 |
| S x IA | 1 | .54 | .64 |
| Error | 56 | .85 | ---- |

### Table A45

### Treatment Group Means for the Uncertain-Confident Pupil Behavior Scale on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.20 | 5.75 | 5.41 |
| Not Given | 5.67 | 6.09 | 5.91 |
| Combined | 5.48 | 5.90 | ---- |

### Table A46

### Summary of the Analysis of Variance for the Uncertain-Confident Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 3.27 | 3.21 |
| Interaction Analysis (IA) | 1 | 2.22 | 2.18 |
| S x IA | 1 | .09 | .09 |
| Error | 56 | 1.02 | --- |

## Table A47

### Treatment Group Means for the Disorganized-Organized Pupil Behavior on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.73 | 5.44 | 5.63 |
| Not Given | 5.50 | 6.00 | 5.73 |
| Combined | 5.58 | 5.79 | ---- |

## Table A48

### Summary of the Analysis of Variance for the Disorganized-Organized Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .15 | .13 |
| Interaction Analysis (IA) | 1 | .40 | .33 |
| S x IA | 1 | 2.33 | 1.93 |
| Error | 56 | 1.21 | ---- |

## Table A49

### Treatment Group Means for the Inflexible-Adaptable Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.43 | 5.50 | 5.65 |
| Not Given | 5.92 | 5.76 | 5.64 |
| Combined | 5.47 | 5.83 | ---- |

## Table A50

### Summary of the Analysis of Variance for the Inflexible-Adaptable Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .02 | .02 |
| Interaction Analysis (IA) | 1 | 2.05 | 2.11 |
| S x IA | 1 | .18 | .19 |
| Error | 55 | .97 | ---- |

## Table A51

## Treatment Group Means for the Pessimistic-Optimistic Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.64 | 5.94 | 5.73 |
| Not Given | 5.83 | 5.94 | 5.94 |
| Combined | 5.80 | 5.89 | ---- |

## Table A52

## Summary of the Analysis of Variance for the Pessimistic-Optimistic Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .57 | .79 |
| Interaction Analysis (IA) | 1 | .13 | .18 |
| S x IA | 1 | .13 | .18 |
| Error | 54 | .72 | --- |

## Table A53

## Treatment Group Means for the Immature-Mature Pupil Behavior on Ryan's Classroom Observation Record

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.67 | 6.06 | 5.81 |
| Not Given | 6.00 | 6.00 | 6.03 |
| Combined | 5.87 | 6.00 | ---- |

## Table A54

## Summary of the Analysis of Variance for the Immature-Mature Pupil Behavior on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .56 | .85 |
| Interaction Analysis (IA) | 1 | .26 | .40 |
| S x IA | 1 | .56 | .85 |
| Error | 55 | .66 | --- |

## Table A55

### Treatment Group Means for the Narrow-Broad Pupil Behavior Scale on Ryan's Classroom Observation Record

|  | Interaction Analysis |  |  |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 5.62 | 5.75 | 5.67 |
| Not Given | 5.73 | 6.12 | 5.94 |
| Combined | 5.69 | 5.96 | ---- |

## Table A56

### Summary of the Analysis of Variance for the Narrow-Broad Pupil Behavior Scale on Ryan's Classroom Observation Record

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .95 | 1.15 |
| Interaction Analysis (IA) | 1 | .80 | .96 |
| S x IA | 1 | .23 | .27 |
| Error | 53 | .83 | ---- |

## Table A57

### Treatment Group Means for the Grades in the Block I Program

| | Interaction Analysis | | |
|---|---|---|---|
| Simulation | Given | Not Given | Combined |
| Given | 3.21 | 3.40 | 3.30 |
| Not Given | 3.41 | 3.12 | 3.26 |
| Combined | 3.31 | 3.24 | ---- |

## Table A58

### Summary of the Analysis of Veriance for the Grades in the Block I Program

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | .04 | --- |
| Interaction Analysis (IA) | 1 | .12 | --- |
| S x IA | 1 | .87 | 2.48 |
| Error | 88 | .35 | --- |

Table A59

Treatment Group Means for the Minnesota Teacher Attitude Inventory

| | Interaction Analysis | | |
|---|---|---|---|
| **Simulation** | **Given** | **Not Given** | **Combined** |
| Given | 62.55 | 70.71 | 67.88 |
| Not Given | 62.55 | 87.00 | 76.00 |
| Combined | 62.55 | 77.11 | ----- |

Table A60

Summary of the Analysis of Variance for the Minnesota Teacher Attitude Inventory

| Source | df | MS | F |
|---|---|---|---|
| Simulation (S) | 1 | 744.50 | --- |
| Interaction Analysis (IA) | 1 | 2320.03 | --- |
| S x IA | 1 | 1028.64 | --- |
| Error | 42 | 65616.83 | --- |

Table A61

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: Speed of Closure

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 11.00 | 12.80 | 21.46 | 16.50 | 15.52 |
| High | 12.82 | 17.40 | 27.09 | 6.92 | 15.82 |
| Combined | 11.91 | 15.10 | 24.27 | 11.71 | ----- |

Table A62

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation
Blocking Factor: Speed of Closure

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 774.17 | 1.71 |
| Level (L) | 1 | 1.92 | ---- |
| T x L | 3 | 282.61 | ---- |
| Error | 80 | 453.41 | ---- |

## Table A63

## Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Syllogistic Reasoning

|  | Treatment Groups |  |  |  |  |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 6.55 | 14.00 | 28.46 | 9.33 | 14.48 |
| High | 17.27 | 16.20 | 23.36 | 15.17 | 17.98 |
| Combined | 11.91 | 15.10 | 28.91 | 12.25 | ----- |

## Table A64

## Summary of the Analysis of Variance for the Time spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Syllogistic Reasoning

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 959.17 | 2.14 |
| Level (L) | 1 | 269.50 | ---- |
| T x L | 3 | 244.77 | ---- |
| Error | 80 | 448.73 | ---- |

## Table A65

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: Induction

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 12.91 | 8.90 | 27.64 | 8.14 | 14.46 |
| High | 10.91 | 21.30 | 24.73 | 15.58 | 18.00 |
| Combined | 11.91 | 15.10 | 26.18 | 12.00 | ----- |

## Table A66

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation
Blocking Factor: Induction

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1014.85 | 2.28 |
| Level (L) | 1 | 276.54 | ---- |
| T x L | 3 | 289.66 | ----- |
| Error | 80 | 444.87 | ---- |

## Table A67

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Spatial Scanning

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 14.27 | 9.20 | 27.91 | 11.92 | 15.89 |
| High | 9.54 | 21.00 | 24.18 | 7.58 | 15.27 |
| Combined | 11.91 | 15.10 | 26.04 | 9.75 | ----- |

## Table A68

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Spatial Scanning

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1175.46 | 2.81 |
| Level (L) | 1 | 8.28 | ---- |
| T x L | 3 | 333.30 | ---- |
| Error | 80 | 418.56 | ---- |

## Table A69

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Perceptional Speed

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 6.34 | 17.30 | 26.36 | 8.42 | 14.48 |
| High | 17.18 | 12.90 | 25.45 | 15.58 | 17.84 |
| Combined | 11.91 | 15.10 | 25.91 | 12.00 | ----- |

## Table A70

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Perceptional Speed

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 975.44 | 2.17 |
| Level (L) | 1 | 248.91 | ---- |
| T x L | 3 | 237.41 | ---- |
| Error | 80 | 449.89 | ---- |

## Table A71

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Visualization

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 8.54 | 11.00 | 24.09 | 16.83 | 15.25 |
| High | 15.27 | 19.20 | 23.45 | 7.67 | 16.14 |
| Combined | 11.91 | 15.10 | 23.77 | 12.25 | ----- |

## Table A72

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Visualization

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 680.91 | 1.54 |
| Level (L) | 1 | 17.28 | ---- |
| T x L | 3 | 358.07 | ---- |
| Error | 80 | 442.15 | ---- |

## Table A73

## Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Ideational Fluency

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 13.73 | 11.90 | 13.09 | 8.83 | 11.82 |
| High | 10.09 | 18.30 | 31.82 | 10.67 | 17.54 |
| Combined | 11.91 | 15.10 | 22.45 | 9.75 | ----- |

## Table A74

## Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Ideational Fluency

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 695.17 | 1.89 |
| Level (L) | 1 | 721.64 | 1.96 |
| T x L | 3 | 501.65 | 1.37 |
| Error | 80 | 367.29 | ----- |

Table A75

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Figural Adaptive Flexibility

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 9.36 | 10.40 | 23.27 | 9.83 | 13.20 |
| High | 14.45 | 19.80 | 28.54 | 9.67 | 17.89 |
| Combined | 11.91 | 15.10 | 25.91 | 9.75 | ----- |

Table A76

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Figural Adaptive Flexibility

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1154.68 | 2.73 |
| Level (L) | 1 | 482.23 | 1.14 |
| T x L | 3 | 85.06 | ---- |
| Error | 80 | 423.56 | ---- |

## Table A77

### Treatment Group Means for the time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Originality (high)

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 5.18 | 14.90 | 9.27 | 9.75 | 9.66 |
| High | 18.64 | 15.30 | 39.27 | 14.75 | 21.98 |
| Combined | 11.91 | 15.10 | 24.27 | 12.25 | ----- |

## Table A78

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Originality (high)

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 741.54 | 1.92 |
| Level (L) | 1 | 3338.23 | 8.65 ** |
| T x L | 3 | 919.40 | 2.38 |
| Error | 80 | 386.05 | ----- |

** $p < .01$

## Table A79

## Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Originality (low)

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 17.27 | 16.20 | 30.27 | 12.50 | 18.98 |
| High | 6.54 | 14.00 | 22.09 | 11.50 | 13.48 |
| Combined | 11.91 | 15.10 | 26.18 | 12.00 | ----- |

## Table A80

## Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: Originality (low)

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1014.85 | 2.27 |
| Level (L) | 1 | 665.50 | 1.49 |
| T x L | 3 | 121.93 | ---- |
| Error | 80 | 446.30 | ---- |

## Table A81

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Achievement

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 1.91 | 15.80 | 24.00 | 11.83 | 13.29 |
| High | 21.91 | 14.40 | 28.36 | 12.42 | 19.23 |
| Combined | 11.91 | 15.10 | 26.18 | 12.12 | ----- |

## Table A82

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Achievement

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1006.49 | 2.34 |
| Level (L) | 1 | 774.10 | 1.80 |
| T x L | 3 | 514.16 | 1.20 |
| Error | 80 | 429.66 | ---- |

## Table A83

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Deference

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 7.09 | 14.70 | 20.36 | 11.50 | 13.34 |
| High | 16.73 | 15.50 | 25.18 | 12.75 | 17.48 |
| Combined | 11.91 | 15.10 | 22.77 | 12.12 | ----- |

## Table A84

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Deference

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 574.39 | 1.35 |
| Level (L) | 1 | 376.41 | ---- |
| T x L | 3 | 91.52 | ---- |
| Error | 80 | 426.06 | ---- |

### Table A85

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Order

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 13.64 | 17.00 | 22.09 | 13.67 | 16.52 |
| High | 10.18 | 13.20 | 26.18 | 9.83 | 14.77 |
| Combined | 11.91 | 15.10 | 24.14 | 11.75 | ----- |

### Table A86

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Order

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 754.46 | 1.64 |
| Level (L) | 1 | 67.37 | ---- |
| T x L | 3 | 83.56 | ---- |
| Error | 80 | 458.63 | ---- |

### Table A87

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Exhibition

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| **Level** | **1** | **2** | **3** | **4** | **Combined** |
| Low | 9.36 | 16.10 | 31.36 | 12.75 | 17.32 |
| High | 14.45 | 14.10 | 20.73 | 9.00 | 14.45 |
| Combined | 11.91 | 15.10 | 26.04 | 10.87 | ----- |

### Table A88

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Exhibition

| **Source** | **df** | **MS** | **F** |
|---|---|---|---|
| Treatment (T) | 3 | 1077.89 | 2.42 |
| Level (L) | 1 | 180.41 | ---- |
| T x L | 3 | 229.58 | ---- |
| Error | 80 | 444.73 | ---- |

Table A89

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: EPPS - Autonomy

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 6.82 | 19.70 | 23.82 | 14.08 | 15.98 |
| High | 17.00 | 10.50 | 21.73 | 8.42 | 14.36 |
| Combined | 11.91 | 15.10 | 22.77 | 11.25 | ---- |

Table A90

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation
Blocking Factor: EPPS - Autonomy

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 624.82 | 1.49 |
| Level (L) | 1 | 57.28 | ---- |
| T x L | 3 | 384.27 | ---- |
| Error | 80 | 418.12 | ---- |

### Table A91

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Affiliation

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 11.73 | 14.70 | 20.91 | 6.75 | 13.34 |
| High | 12.09 | 15.50 | 31.18 | 16.75 | 18.91 |
| Combined | 11.91 | 15.10 | 26.04 | 11.75 | ----- |

### Table A92

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Affiliation

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1012.18 | 2.27 |
| Level (L) | 1 | 682.10 | 1.53 |
| T x L | 3 | 167.41 | ---- |
| Error | 80 | 446.66 | ---- |

Table A93

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: EPPS - Intraception

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 18.54 | 10.40 | 27.27 | 12.08 | 17.11 |
| High | 5.27 | 19.80 | 24.54 | 10.42 | 14.79 |
| Combined | 11.91 | 15.10 | 25.91 | 11.25 | ----- |

Table A94

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation
Blocking Factor: EPPS - Intraception

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1028.63 | 2.32 |
| Level (L) | 1 | 118.23 | ---- |
| T x L | 3 | 450.02 | ---- |
| Error | 80 | 442.77 | ---- |

## Table A95

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Succorance

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 10.18 | 14.10 | 30.09 | 11.67 | 16.45 |
| High | 13.64 | 16.10 | 21.73 | 12.83 | 16.00 |
| Combined | 11.91 | 15.10 | 25.90 | 12.25 | ----- |

## Table A96

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Succorance

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 959.17 | 2.11 |
| Level (L) | 1 | 4.54 | ---- |
| T x L | 3 | 157.99 | ---- |
| Error | 80 | 455.29 | ---- |

### Table A97

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Dominance

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 15.36 | 15.00 | 22.27 | 9.50 | 15.41 |
| High | 8.45 | 15.20 | 29.82 | 13.92 | 16.82 |
| Combined | 11.91 | 15.10 | 26.04 | 11.71 | ----- |

### Table A98

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Dominance

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1015.11 | 2.24 |
| Level (L) | 1 | 43.68 | ---- |
| T x L | 3 | 216.41 | ---- |
| Error | 80 | 452.78 | ---- |

### Table A99

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Abasement

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 12.00 | 12.60 | 38.73 | 8.25 | 17.79 |
| High | 11.82 | 17.60 | 7.09 | 15.25 | 12.89 |
| Combined | 11.91 | 15.10 | 22.91 | 11.75 | ----- |

### Table A100

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Abasement

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 609.94 | 1.67 |
| Level (L) | 1 | 530.18 | 1.45 |
| T x L | 3 | 1797.91 | 4.93 * |
| Error | 80 | 364.95 | ---- |

* $p < .05$

Table A101

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: EPPS - Nurturance

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 14.73 | 19.40 | 17.36 | 7.50 | 14.48 |
| High | 9.09 | 10.80 | 34.45 | 17.00 | 17.98 |
| Combined | 11.91 | 15.10 | 25.91 | 12.25 | ----- |

Table A102

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation
Blocking Factor: EPPS - Nurturance

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 959.17 | 2.24 |
| Level (L) | 1 | 269.50 | ---- |
| T x L | 3 | 807.69 | 1.89 |
| Error | 80 | 427.62 | ---- |

Table A103

Treatment Group Means for the Time spent in Stimulation and Management Behaviors during Student Teaching Observation
Blocking Factor: EPPS - Change

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 18.36 | 21.80 | 22.64 | 12.42 | 18.59 |
| High | 5.45 | 8.40 | 29.18 | 10.83 | 13.52 |
| Combined | 11.91 | 15.10 | 25.91 | 11.62 | ----- |

Table A104

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Sutdent Teaching Observation
Blocking Factor: EPPS - Change

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1001.22 | 2.29 |
| Level (L) | 1 | 565.10 | 1.29 |
| T x L | 3 | 499.97 | 1.44 |
| Error | 80 | 437.13 | ---- |

## Table A105

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Endurance

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 15.64 | 15.60 | 19.54 | 11.75 | 15.54 |
| High | 8.18 | 14.60 | 26.00 | 12.25 | 15.20 |
| Combined | 11.91 | 15.10 | 22.77 | 12.00 | ----- |

## Table A106

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Endurance

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 581.05 | 1.36 |
| Level (L) | 1 | 2.56 | ---- |
| T x L | 3 | 179.00 | ---- |
| Error | 80 | 428.00 | ---- |

Table A107

Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Heterosexuality

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 8.27 | 15.90 | 25.82 | 11.50 | 15.27 |
| High | 15.54 | 14.30 | 22.45 | 11.25 | 15.82 |
| Combined | 11.91 | 15.10 | 24.14 | 11.37 | ----- |

Table A108

Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Heterosexuality

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 778.66 | 1.70 |
| Level (L) | 1 | 6.54 | ---- |
| T x L | 3 | 119.92 | ---- |
| Error | 80 | 456.92 | ---- |

## Table A109

**Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: EPPS - Agression**

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 9.09 | 11.90 | 30.64 | 16.25 | 17.07 |
| High | 14.73 | 18.30 | 21.73 | 7.17 | 15.23 |
| Combined | 11.91 | 15.10 | 26.18 | 11.71 | ----- |

## Table A110

**Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Agression**

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 1035.08 | 2.35 |
| Level (L) | 1 | 74.56 | ---- |
| T x L | 3 | 412.19 | ---- |
| Error | 80 | 443.21 | ---- |

## Table A111

### Treatment Group Means for the Time Spent in Stimulation and Management Behaviors during Student Teaching Observation Blocking Factor: Consistency

| | Treatment Groups | | | | |
|---|---|---|---|---|---|
| Level | 1 | 2 | 3 | 4 | Combined |
| Low | 7.36 | 14.90 | 32.27 | 11.75 | 16.50 |
| High | 16.45 | 15.30 | 19.54 | 11.67 | 15.66 |
| Combined | 11.91 | 15.10 | 25.91 | 11.71 | ----- |

## Table A112

### Summary of the Analysis of Variance for the Time Spent in Stimulation and Management Behavior during Student Teaching Observation Blocking Factor: EPPS - Consistency

| Source | df | MS | F |
|---|---|---|---|
| Treatment (T) | 3 | 995.35 | 2.23 |
| Level (L) | 1 | 15.56 | ---- |
| T x L | 3 | 443.58 | ---- |
| Error | 80 | 446.23 | ---- |

# APPENDIX B

## Methods of Interaction Analysis Training

# I INTRODUCTION

## Purpose

The materials and methods described in this manual were designed to train college-level students in the use of Interaction Analysis, a system for observing and analyzing teacher behavior in the classroom. The manual deals with the use of a series of seven Films of Classroom Interaction Situations (FOCIS). Six films are intended as training devices, while one is intended as an evaluation or test instrument. Students satisfactorily completing training using these films and the other suggested materials will be able to function as trained recorders and will be able to interpret and use the data recorded.

## Rationale

Recent attempts to train prospective educators in the use of interaction analysis have included either taped presentations of classroom situations, or actual classroom observations by the trainees. Both of these systems present difficulties. The actual classroom observation, although highly desirable, is often not practical because of a lack of classrooms, scheduling difficulties and other similar problems. By using taped presentations of classroom situations, many of the difficulties of actual classroom observation have been alleviated. However, taped presentations may fail to communicate many of the potentially important discrimination cues present in the actual classroom situation. These cues involve the visual cues which accompany the auditory cues. The visual cues are often vital to the interpretation of the interactions which occur in the classroom. With the taped presentation, the trainee must rely solely upon auditory cues as a basis for classification of classroom interaction behaviors.

For example, an interaction pattern such as; teacher: "Bill, did you have something further to add?" Bill: "Yes, I think . . . . " may be categorized from tape as a teacher question (category four) followed by a student teacher-initiated response (category eight). In an actual classroom situation, such an interaction pattern could be categorized as a teacher direction followed by a student self-initiated response or categories six and nine. Here, the teacher may be calling on individuals who express a desire to respond by raising their hands. Thus, by the teacher calling on the student, the teacher is indicating that the student may speak at that time.

In the case of categories six and seven (giving directions and criticizing or justifying authority), we find that many times a direction has the intent of changing student behavior. Here, visual cues can definitely help the observer to make the appropriate category selection. The observer can "see" the classroom situation and thus, judge the intent of teacher statements easier.

These examples represent only two of the possibilities in which visual cues can assist in the selection of an appropriate category. There are a variety of situations involving almost every category in which the presence of visual cues during the verbal interaction can be highly significant. These cues will allow the trainee to select the most appropriate category.

The Films of Classroom Interaction Situation (FOCIS) have been developed to meet this training need. Both auditory and visual cues can be presented to the trainee with the FOCIS classroom films. The trainee has the definite advantage of being trained in "context", i.e., training with the benefit of the visual cues present. These visual cues are an intrinsic part of the social interaction which occurs in the classroom and should certainly not be separated during training.

## Materials

The materials designed to be used in conjunction with this manual include (a) six training films, (b) one criterion (test) film, (c) type-scripts of each training film (with three second intervals marked), and (d) sound tapes of each training film with three second intervals recorded.

The additional materials (filmstrips, texts, tally sheets, etc.,) can be purchased through Paul S. Amidon and Associates, Inc., 1035 Plymouth Bldg., Minneapolis, Minnesota 55402.

## II RECORDING SKILLS

### Instructional Objectives

After 5-6 hours of classroom instruction with these materials, trainees will:

(1) Classify and record classroom interaction behaviors, according to Flander's 10 categories for interaction analysis at the rate of 20 tallies per minute;

(2) Tally in agreement with trained observers at least 70% of the time, as measured by Scott's Reliability Coefficient;

(3) Reach the desired level of proficiency after maximum training period of 10 hours;

(4) Demonstrate a high degree of transfer from film training to actual classroom situations, as measured by Scott's formula, when compared with expert observers.

### Class Time Required

This will vary with instructor and the degree of reliability desired on the part of the trainee. (Minimum: 5-6 hours)

### Prerequisite knowledge Required

1. Instructor: It is assumed that the instructor is familiar with Flander's technique so that he can provide accurate feedback to students during training.
2. Students: Should obtain scores of 90% or above on the proficiency quiz before using the film series for training in the application of Flander's technique. It is suggested that students be familiar with *The Role of The Teacher in The Classroom* by Amidon & Flanders prior to or concurrently with training.

### Necessary Materials for Instruction

| Quantity | Item |
|---|---|
| 1/student | Book: Amidon, Edmond J., and Ned A. Flanders, The Role of The Teacher in the Classroom. |
| 1/student/observation | Recording Sheets |
| 1 | *3-second time indicator (preferably auditory) |
| 1 | 16 mm projector with speaker |
| 1 | Projection screen |

### Instructional Procedures

1. Preliminary: (Learning the Categories)

    (a) Assign pages 1 through 42 in The Role of the Teacher in the Classroom**as reading for students, with special reference to page 12;

    (b) Lecture on interaction analysis, with particular emphasis on defining the ten categories;

    (c) Give the preliminary quiz to determine whether students have mastered the category scheme.

2. Using the Films: (Learning to Apply the Categories)

    (a) Show a small segment of Film # 1. Have students classify classroom behaviors into two broad categories: Teacher Talk (T) and Student Talk (S) (Record each statement) Tally each category and compare.

    (b) Discuss tempo. Introduce time indicator and record sheets.

    (c) Show second segment of Film # 1. Record using Flander's categories. As categories occur, give verbal feedback to students. If any questions occur, stop and discuss.

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*This instrument consists of a standard tape recorder and either a full roll of tape with three second intervals recorded, or a continuous loop designed to indicate the three second interval.

** A series of filmstrips is available for preliminary training should more extensive learning be desired. (See materials, Chapter I)

(d) Have students categorize type-script of Film # 1. Use all ten categories.

(e) Check typed scripts with instructor's copy. Answer any questions concerning categories.

(f) Play tape of Film #1. Have students record using all ten categories. Stop occasionally to answer any questions (Three second intervals on tape)

(g) Tally scores and figure percentages. Compare percentages with instructor's copy.

(h) Show Film # 2 and repeat steps d through g. (Only if majority of students are having difficulty).

(i) Show Film # 3. Have students classify, tally percentages, and calculate I/D ratio for the film-script of Film # 3. (This works well as a homework assignment.

(j) Compare category percentages and I/D ratio for Film # 3. Discuss ambiguities or difficulties in categorizing, tallying scores, or comparing tallies in class.

(k) Show Film # 4. Have students tally. Calculate and compare percentages. Allow for discussion of patterns following each film showing. (The sound-tapes of each film will allow students to analysis the teacher-learner patterns present in each film.)

(l) Discuss construction of a matrix. Have students construct matrix for Film # 4. Compare with instructor's copy.

(m) Show Film # 5. Tally categories and construct a matrix. Emphasize speed and accuracy. Compare matrix for Film # 5.

(n) Repeat showing Film # 6 or # 7 (depends upon criterion film selection). Speed and accuracy are emphasized here also.

(o) Repeat other films as necessary.

(p) See Supplementary Activities for further training suggestions.

## F. Evaluation

(a) Show either Film # 6 (18 min.) or Film # 7 (20 min.) as the criterion film, having students categorize, tally, and figure percentages. (The criterion film should not be seen previously).

(b) Student reliability scores are determined by use of Scott's reliability formula. (see appendix E for procedure).

## G. Supplementary Activities and/or Suggestions

(a) Have students categorize behaviors which they observe on evening TV programs for additional practice.

(b) Use written descriptions (film-scripts) of classroom situations for homework assignments, or as basis for detailed analysis in class.

(c) The films might be used in the laboratory or on individual or small group basis, but feedback by a trained observer (either teacher or other student) should be provided.

(d) Student record sheets might be used during training to teach matrix construction. Filmstrips are available through Flanders and Amidon which teach matrix construction.

(e) Flanders technique might be compared and contrasted with other behavior classification methods or systems.

## III INTERPRETIVE AND ANALYTICAL SKILLS

### Instructional Objectives

After 4-5 hours of classroom instruction, trainees will:

(1) Construct a matrix using the data they have recorded, calculate the results in percentages, and figure the I/D ratios.

(2) Interpret the data on the matrix as to the extent of intended direct influence (vicious circle), student talk following teacher talk, student talk preceding teacher talk, content cross, steady state, and either what preceded or followed any specific action.

(3) Identify common patterns which may appear on a matrix i.e., teacher-directed quick drill, development of inquiry process, attending to student feelings, etc.

(4) Control their verbal behavior to the extent that they can limit it to any designated categories, or produce specified sequences of categories.

(5) Repeat the effect of certain types of behavior on students in specific situations, e.g.:

  (a) The effect of providing extensive directions early in a planning period.

  (b) Difference in effect of using 2 and 3's.

### Necessary Materials for Instruction

Training films and movie projector
Training tapes and tape projector
*Transparencies of selected matrices and overhead projector.
*Overlay transparencies of areas and patterns of matrices
Filmstrips and tapes put out by Flanders (#'s 3 and 4)
Typescripts of tapes
*Mimeographed examples of matrices

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* These materials should be constructed by the instructor from the FOCIS films. General matrices can be purchased through Amidon and Associates, or constructed from information in Chapter III of the Role of _The Teacher in the Classroom_.

## Instructional Procedures

This instruction may occur either concurrently with the instruction described in Chapter II or as a separate series of lessons following the completion of the instruction on learning to record the categories.*

## Part I - (Matrix Interpretation)

Lesson I: Flanders' Filmstrip # 4 is a good introduction to the procedure of entering the columns of recorded numbers into a matrix. Have one student record a brief (2 to 3 min.) interval from one of the tapes on the board. Then let the class participate as this is recorded into a matrix, the columns totaled (and checked for balance) and the percentages figured. Give them a dittoed recording of the sequence of numbers from one of the films they have worked with previously and ask them to make a matrix from it for the next class period. Give them instructions to calculate the percentages for column totals, teacher talk, and student talk.

Lesson II: Use a transparency which illustrates the various areas of the matrix and a transparency of the matrix they are to have prepared from Lesson I. First project the matrix transparency and clear up any difficulties in computation discovered from comparing their matrix with the projected one. Then put on the transparency showing the various areas of influence.** Discuss each area and why it shows what it shows. Again show the original matrix and ask students to make any statements they wish concerning what they think this matrix indicates. Be sure to have students identify how they reached their conclusion. Have them refer to cells by numbers whenever possible in explaining their conclusions. Point out on the projected matrix the various cells or areas as they are referred to in the discussion.

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* Preliminary instruction in matrix procedures and interpretation is best taught in conjunction with previously outlined training.

** The matrix showing the various areas of influence can be constructed from information given in Chapter III of The Role of the Teacher in the Classroom. The use of different colors will make the areas easier to visualize.

Lesson III. Use the transparency overlays to project the various common patterns which can be found in a matrix. Use mimeographed examples of a variety of matrices to see if any of these patterns can be found (i.e., teacher directed quick drill or attending to student feelings). Have the students construct a set of matrices of successive lessons by a teacher who was trying to change his behavior. Ask students to determine from examining the matrices if there was a change in the desired direction.

Part II - (Altering Verbal Behavior)

Lesson I: Try role playing in groups of 3 (taking turns at playing each part) to convince students that the most effective way of getting across a point is not always through the use of lecture and directions.

(Description of role playing for I.A. training)

Give A the role of selling a new product using only categories 4, 5, 6, and 7 and being sure that he uses all of them.

Give B the role of the customer.

Give C the job of recording to see if A does use only those categories and all of them.

Shift roles until all 3 have played each role. Then try the same procedure using only categories 1, 2, 3, and 4.

Discuss afterwards the difference in reactions produced by the use of direct or indirect influence. Point out that teachers often try to "sell" learning by use of just the direct categories.

Have the students try role playing various problems which come up in their observation of classroom situations using a variety of selected categories which they wish to try out for effectiveness.

As an example: The children come in from recess and the teacher says "Take out your spelling lists and get ready for your test" to which the children respond, "Do we have to?" "Not again!" "Back to the salt mines", etc. Should she reply with 1's or 7's? What will happen if she uses 1's or 7's? What will happen if she uses 1's followed by 3's and then shifts to 6's, as compared to 7's followed by 5's and then 6's?

Each role playing should be done to demonstrate the purpose of using such a system to identify the effects produced on others by various types of verbal behavior and the advantages in being able to control ones use of verbal expression to the extent that the desired behavior can be produced. Such training seems to produce an increased sensitivity to the effect one has upon others--certainly a desirable quality for teachers.

# APPENDIX C

## Supervising Teacher Observation

Classroom Simulation Project
Supervising Teacher Observation

Teaching Research Division
Monmouth, Oregon
March, 1967

## Classroom Observation Record
## Instructions

The Elementary Block students who are working with you this quarter participated in research with the Classroom Simulation Project last quarter at OCE. As part of the evaluation of our training procedures, we need to determine the effect of the different training methods on students' classroom teaching. In order to gain this information we will be observing the student teachers' performance. We would also appreciate your assistance in providing us with an additional observation from your point of view. In no way will these observations be used to grade the students. Rather we are evaluating our own procedures.

The observations and evaluations that we would like you to make are contained on the Classroom Observation Record, a copy of which, with Glossary, accompanies this information. We find that this procedure permits a penetrating measurement of teacher performance. We hope that you will not find this task of evaluating the student's performance too time consuming and that the Glossary will be most helpful in clarifying the meaning of the terms.

The following instructions have been prepared to explain the meaning of the scale values and how to mark each of them after you have made your evaluation of the student teacher's performance. In addition there are some guidelines to follow to help maintain a degree of uniformity from classroom to classroom. This will aid us in making the proper interpretation of the relationship between the student teachers' performance and his prior training.

1) Try to base your evaluations on observations that you will make during an instructional period of about 1/2 hour with the Elementary Block student teacher in charge of the entire class. This time should be one that is fairly representative of the student teacher's typical performance.

2) If the above is not feasible, would you please indicate on the Record Sheet, the teaching circumstances in which you did observe her (e.g., small group reading, team teaching, etc.)

3) Please fill out the Record at the conclusion of the observation of the student teacher.

4) *Do* circle the N if some behavioral dimensions are not observed by you. Sometimes they are just not relevant in a given situation.

5) Please read the Record and Glossary over as soon as possible. These words and the dimensions they represent will be clear to you when you make the evaluation in class.

6) Try to fill out this Record in such a way that the student teachers will be unaware of it in order that their teaching will not be affected by knowledge of the fact that this record is being made.

7) The Classroom Record consists of 22 seven point scales of which the extremes are identified by descriptive adjectives which are antonyms. The adjectives are illustrated and defined in the Glossary in order to help in improving the degree of understanding and agreement of these terms among different observers. The scale value that the observer chooses (1 through 7) is quite straightforward. Using the first dimension as an example (apathetic-alert):

If you felt that the behavior of the children was *extremely* apathetic during the period of observation you would circle the 1 as follows:

1. Apathetic [✓ 1] 2 3 4 5 6 7 N Alert

Conversely, if you felt that the students were extremely alert you would circle the 7.

1. Apathetic 1 2 3 4 5 6 [✓ 7] N Alert

If you felt that the students were no more characterized by one end of the scale than the other, *e.g.*, that they were no more apathetic than alert, then you would circle the mid point which is 4.

1. Apathetic 1 2 3 [✓ 4] 5 6 7 N Alert

The remaining values represent intermediate strengths of the extremes and can be described as follows:

1. Extremely (Apathetic, Obstructive, etc.)
2. Very much " " "
3. Somewhat " " "
4. Neutral (Neither one nor the other.)
5. Somewhat (Alert, Responsible, etc.)
6. Very much " " "
7. Extremely " " "

If you feel that some of these dimensions simply aren't relevant during the observation period because of the subject matter, the grade level or for some other reason you would circle the N indicating that the behavioral dimension was not observed.

Apathetic 1 2 3 4 5 6 7 [✓ N] Alert

8) Finally, we realize that this task will require time and effort on your part. We hope that this task will be interesting and rewarding. We appreciate your assistance in aiding our efforts towards the improvement of teacher education.

# GLOSSARY

(To be used with classroom observation record.)

## Pupil Behaviors

### 1. Apathetic-Alert Pupil Behavior

| Apathetic | Alert |
|---|---|
| 1. Listless. | 1. Appear anxious to recite and participate. |
| 2. Bored-acting. | 2. Watch teacher attentively. |
| 3. Enter into activities halfheartedly. | 3. Work concentratedly. |
| 4. Restless. | 4. Seem to respond eagerly. |
| 5. Attention wanders | 5. Prompt and ready to take part in activities when they begin. |
| 6. Slow in getting under way. | |

### 2. Obstructive-Responsible Pupil Behavior

| Obstructive | Responsible |
|---|---|
| 1. Rude to one another and/or to teacher. | 1. Courteous, co-operative, friendly with each other and with teacher. |
| 2. Interrupting; demanding attention; disturbing. | 2. Complete assignments without complaining or unhappiness |
| 3. Obstinate; sullen. | 3. Controlled voices. |
| 4. Refusal to participate. | 4. Received help and criticism attentively. |
| 5. Quarrelsome; irritable. | 5. Asked for help when needed. |
| 6. Engaged in name-calling and/or tattling. | 6. Orderly without specific directions from teacher. |
| 7. Unprepared. | 7. Prepared. |

### 3. Uncertain-Confident Pupil Behavior

| Uncertain | Confident |
|---|---|
| 1. Seem afraid to try; unsure. | 1. Seem anxious to try new problems or activities. |
| 2. Hesitant; restrained. | 2. Undisturbed by mistakes. |
| 3. Appear embarrassed. | 3. Volunteer to recite. |
| 4. Frequent display of nervous habits, nail-biting, etc. | 4. Enter freely into activities. |
| 5. Appear shy and timid. | 5. Appear relaxed. |
| 6. Hesitant and/or stammering in speech. | 6. Speak with assurance. |

### 4. Dependent-Initiating Pupil Behavior

| Dependent | Initiating |
|---|---|
| 1. Rely on teacher for explicit directions. | 1. Volunteer ideas and suggestions |
| 2. Show little ability to work things out for selves. | 2. Showed resourcefulness. |
| 3. Unable to proceed when initiative called for. | 3. Take lead willingly. |
| 4. Appear reluctant to take lead or to accept responsibility. | 4. Assume responsibilities without evasion. |

## Teacher Behaviors

### 5. Partial-Fair Teacher Behavior

| Partial | Fair |
|---|---|
| 1. Repeatedly slighted a pupil. | 1. Treated all pupils approximately equally. |
| 2. Corrected or criticized certain pupils | 2. In case of controversy pupil allowed to explain his side. |
| 3. Repeatedly gave a pupil special advantages. | 3. Distributed attention to many pupils. |
| 4. Gave most attention to one or a few pupils. | 4. Rotated leadership impartially. |
| 5. Showed prejudice (favorable or unfavorable) towards some social, racial, or religious groups. | 5. Based criticism or praise on factual evidence, not hearsay. |
| 6. Expressed suspicion of motives of a pupil. | |

### 6. Autocratic-Democratic Teacher Behavior

| Autocratic | Democratic |
|---|---|
| 1. Tells pupils each step to take. | 1. Guided pupils without being mandatory. |
| 2. Intolerant of pupils' ideas. | 2. Exchanged ideas with pupils. |
| 3. Mandatory in giving directions; orders to be obeyed at once. | 3. Encouraged (asked for) pupil opinion |
| 4. Interrupted pupils although their discussion was relevant. | 4. Encouraged pupils to make own decisions. |
| 5. Always directed rather than participated. | 5. Entered into activities without domination. |

### 7. Aloof-Responsive Teacher Behavior

| Aloof | Responsive |
|---|---|
| 1. Stiff and formal in relations with pupils. | 1. Approachable to all pupils. |
| 2. Apart; removed from class activity. | 2. Participates in class activity. |
| 3. Condescending to pupils. | 3. Responded to reasonable requests and/or questions. |
| 4. Routine and subject matter only concern; pupil as persons ignored. | 4. Speaks to pupils as equals. |
| 5. Referred to pupil as "this child" or "that child." | 5. Commends effort. |
| | 6. Gives encouragement. |
| | 7. Recognized individual differences. |

### 8. Restricted-Understanding Teacher Behavior

| Restricted | Understanding |
|---|---|
| 1. Recognized only academic accomplishments of pupils, no concern for personal problems. | 1. Showed awareness of a pupil's personal emotional problems and needs. |
| 2. Completely unsympathetic with a pupil's failure to a task. | 2. Was tolerant of error on part of pupil. |
| 3. Called attention only to very good or very poor work. | 3. Patient with a pupil beyond ordinary limits of patience. |
| 4. Was impatient with a pupil. | 4. Showed what appeared to be sincere sympathy with a pupils' viewpoint. |

### 9. Harsh-Kindly Teacher Behavior

| Harsh | Kindly |
|---|---|
| 1. Hypercritical; fault-finding. | 1. Goes out of way to be pleasant and/or to help pupils; friendly. |
| 2. Cross; curt. | 2. Give a pupil a deserved compliment. |
| 3. Depreciated pupil's efforts; was sarcastic. | 3. Found good things in pupils to call attention to. |
| 4. Scolds a great deal. | 4. Seemed to show sincere concern for a pupil's personal problem. |
| 5. Lost temper. | 5. Showed affection without being demonstrative. |
| 6. Used threats. | 6. Disengaged self from a pupil without bluntness. |
| 7. Permitted pupils to laugh at mistakes of others. | |

### 10. Dull-Stimulating Teacher Behavior

| Dull | Stimulating |
|---|---|
| 1. Uninteresting, monotonnous explanations. | 1. Highly interesting presentation; gets and holds attention without being flashy. |
| 2. Assignments provide little or no motivation. | 2. Clever and witty, though not smart-alecky or wise-cracking. |
| 3. Fails to provide challenge. | 3. Enthusiastic; animated. |
| 4. Lack of animation. | 4. Assignments challenging. |
| 5. Failed to capitalize on pupil interests. | 5. Took advantage of pupil interests. |
| 6. Pedantic, boring. | 6. Brought lesson successfully to a climax. |
| 7. Lacks enthusiasm; bored acting. | 7. Seemed to provoke thinking. |

### 11. Stereotyped-Original Teacher Behavior

| Stereotyped | Original |
|---|---|
| 1. Used routine procedures without variation. | 1. Used what seemed to be original and relatively unique devices to aid instruction. |
| 2. Would not depart from procedure to take advantage of a relevant quastion or situation. | 2. Tried new materials or methods. |
| 3. Presentation seemed unimaginative. | 3. Seemed imaginative and able to develop presentation around a question or situation. |
| 4. Not resourceful in answering questions or providing explanation. | 4. Resourceful in answering question; had many pertinent illustrations available. |

12. Apathetic-Alert Teacher Behavior

| Apathetic | Alert |
|---|---|
| 1. Seemed listless; lanquid; lacked enthusiasm. | 1. Appeared buoyant; wid-awake; enthusiastic about activity of the moment. |
| 2. Seemed bored by pupils. | 2. Kept constructively busy. |
| 3. Passive in response to pupils. | 3. Gave attention to, and seemed interested in, what was going on in class. |
| 4. Seemed preoccupied. | 4. Prompt to "pick up" class when pupils' attention showed signs of lagging. |
| 5. Attention seemed to wander. | |
| 6. Sat in chair most of time; took no active part in class activities. | |

13. Unimpressive-Attractive Teacher Behavior

| Unimpressive | Attractive |
|---|---|
| 1. Untidy or sloppily dressed. | 1. Clean and neat. |
| 2. Inappropriately dressed. | 2. Well-groomed; dress showed good taste. |
| 3. Drab, colorless. | 3. Posture and bearing attractive. |
| 4. Posture and bearing unattractive. | 4. Free from distracting personal habits. |
| 5. Possessed distracting personal habits. | 5. Plainly audible speech; good expression; agreeable voice tone; good inflection. |
| 6. Mumbled; inaudible speech; limited expression; disagreeable voice tone; poor inflection. | |

## 14. Evading-Responsible Teacher Behavior

### Evading

1. Avoided responsibility; disinclined to make decisions.
2. "Passed the buck" to class, to other teachers, etc.
3. Left learning to pupil, failing to give adequate help.
4. Let a difficult situation get out of control.
5. Assignments and directions indefinite.
6. No insistance on either individual or group standards.
7. Inattentive with pupils.
8. Cursory.

### Responsible

1. Assumed responsibility; makes decisions as required.
2. Conscientious.
3. Punctual.
4. Painstaking; careful.
5. Suggested aids to learning.
6. Controlled a difficult situation.
7. Gave definite directions.
8. Called attention to standards of quality.
9. Attentive to class.
10. Thorough.

## 15. Erratic-Steady Teacher Behavior

### Erratic

1. Impulsive; uncontrolled; temperamental; unsteady.
2. Course of action easily swayed by circumstances of the moment.
3. Inconsistent.

### Steady

1. Calm; controlled.
2. Maintained progress toward objective.
3. Stable, consistent, predictable.

## 16. Excitable-Poised Teacher Behavior

### Excitable

1. Easily disturbed and upset; flustered by classroom situations.
2. Hurried in class activities; spoke rapidly using many words and gestures.
3. Was "jumpy"; nervous.

### Poised

1. Seemed at ease at all times.
2. Unruffled by situation that developed in classroom; dignified without being stiff or formal.
3. Unhurried in class activities; spoke quietly and slowly.
4. Successfully diverted attention from stress situation in classroom.

### 17. Uncertain-Confident Teacher Behavior

**Uncertain**

1. Seemed unsure of self faltering, hesitant.
2. Appeared timid and shy.
3. Appeared artificial.
4. Disturbed and embarrassed by mistakes and/or criticism.

**Confident**

1. Seemed sure of self; self-confident in relations with pupils.
2. Undisturbed and unembarrassed by mistakes and/or criticism.

### 18. Disorganized-Systematic Teacher Behavior

**Disorganized**

1. No plan for class work.
2. Unprepared.
3. Objectives not apparent; undecided as to next step.
4. Wasted time.
5. Explanations not to the point.
6. Easily distracted from matter at hand.

**Systematic**

1. Evidence of a planned though flexible procedure.
2. Well prepared.
3. Careful in planning with pupils.
4. Systematic about procedure of class.
5. Had anticipated needs.
6. Provided reasonable explanations.
7. Held discussion together; objectives apparent.

### 19. Inflexible-Adaptable Teacher Behavior

**Inflexible**

1. Rigid in conforming to routine.
2. Made no attempt to adapt materials to individual pupils.
3. Appeared incapable of modifying explanation or activities to meet particular classroom situations.
4. Impatient with interruptions and digressions.

**Adaptable**

1. Flexible in adapting explanations.
2. Individualized materials for pupils as required; adapted
3. Took advantage of pupils' questions to further clarify ideas.
4. Met an unusual classroom situation competently.

### 20. Pessimistic-Optimistic Teacher Behavior

| Pessimistic | Optimistic |
|---|---|
| 1. Depressed; unhappy. | 1. Cheerful; good-natured. |
| 2. Skeptical. | 2. Genial. |
| 3. Called attention to potential "bad." | 3. Joked with pupils on occasion. |
| 4. Expressed hopelessness of "education today," the school system, or fellow educators. | 4. Emphasized potential "good." |
| 5. Noted mistakes; ignored good points. | 5. Looked on bright side; spoke optimistically on the future. |
| 6. Frowned a great deal; had unpleasant facial expression. | 6. Called attention to good points; emphasized the positive. |

### 21. Immature-Integrated Teacher Behavior

| Immature | Integrated |
|---|---|
| 1. Appeared naive in approach to classroom situations. | 1. Maintained class as center of activity; kept self out of spotlight, referred to class's activities, not own. |
| 2. Self-pitying; complaining; demanding. | 2. Emotionally well controlled. |
| 3. Boastful; conceited. | |

### 22. Narrow-Broad Teacher Behavior

| Narrow | Broad |
|---|---|
| 1. Presentation strongly suggested limited background in subject or material; lack of scholarship. | 1. Presentation suggest good background in subject; good scholarship suggested. |
| 2. Did not depart from text. | 2. Drew examples and explanations from various sources and related fields. |
| 3. Failed to enrich discussions with illustrations from related areas. | 3. Showed evidence of broad cultural background in science, art, literature, history, etc. |
| 4. Showed little evidence of breadth of cultural background in such areas as science, arts, literature, and history. | 4. Gave satisfying, complete, and accurate answers to questions. |
| 5. Answers to pupils' questions incomplete or inaccurate. | 5. Was constructively critical in Approach to subject matter. |
| 6. Noncritical approach to subject. | |

## CLASSROOM OBSERVATIONAL RECORD

Student Teacher_________ Class or subject____________Date___________

Lesson: Type____________ Length____________ Observer_______________

(Circle N if Scale is Not Appropriate For the Class and/or Teacher.)

| PUPIL BEHAVIOR | | | REMARKS |
|---|---|---|---|
| 1. Apathetic | 1 2 3 4 5 6 7 N | Alert | |
| 2. Obstructive | 1 2 3 4 5 6 7 N | Responsible | |
| 3. Uncertain | 1 2 3 4 5 6 7 N | Confident | |
| 4. Dependent | 1 2 3 4 5 6 7 N | Initiating | |
| TEACHER BEHAVIOR | | | |
| 5. Partial | 1 2 3 4 5 6 7 N | Fair | |
| 6. Autocratic | 1 2 3 4 5 6 7 N | Democratic | |
| 7. Aloof | 1 2 3 4 5 6 7 N | Responsive | |
| 8. Restricted | 1 2 3 4 5 6 7 N | Understanding | |
| 9. Harsh | 1 2 3 4 5 6 7 N | Kindly | |
| 10. Dull | 1 2 3 4 5 6 7 N | Stimulating | |
| 11. Stereotyped | 1 2 3 4 5 6 7 N | Original | |
| 12. Apathetic | 1 2 3 4 5 6 7 N | Alert | |
| 13. Unimpressive | 1 2 3 4 5 6 7 N | Attractive | |
| 14. Evading | 1 2 3 4 5 6 7 N | Responsible | |
| 15. Erratic | 1 2 3 4 5 6 7 N | Steady | |
| 16. Excitable | 1 2 3 4 5 6 7 N | Poised | |
| 17. Uncertain | 1 2 3 4 5 6 7 N | Confident | |
| 18. Disorganized | 1 2 3 4 5 6 7 N | Systematic | |
| 19. Inflexible | 1 2 3 4 5 6 7 N | Adaptable | |
| 20. Pessimistic | 1 2 3 4 5 6 7 N | Optimistic | |
| 21. Immature | 1 2 3 4 5 6 7 N | Integrated | |
| 22. Narrow | 1 2 3 4 5 6 7 N | Broad | |

From Ryans, D., "Teacher Characteristics Study"; reproduced with permission of the American Council on Education.

# APPENDIX D

## Classroom Observational System

# CLASSROOM OBSERVATIONAL SYSTEM*
## CODES AND CATEGORIES

## TEACHER BEHAVIORS

| | |
|---|---|
| *Instruction* | Any teacher behavior, verbal or non-verbal, directed to the students (Ss) that is relevant to the apparent instructional objectives. |
| Ii | *Instruction*, *individual*. Any instructional behavior in which the T is dealing only with one child in such a way that the rest of the class or group is not involved and/or listening. |
| Il | *Instruction*, *local*. Same as above, except that the attention of the teacher is directed specifically to a group (e.g. at a table in the class, to the exclusion of the rest of the class). |
| Ic | *Instruction*, *class*. Same as above except that the attention of the teacher is directed toward the entire class. (Note the teacher can be talking to one child in the class but if it is in a tone of voice and of sufficient volume that the rest of the class is listening, then it is Ic and not Ii.) |
| *Stimulation* | Any teacher behavior which stimulates a response when learner(s) appear disinterested or inattentive. Note that this behavior causes S(s) to *do* something consistent with objectives, which also causes the disinterested or disruptive S(s) action to *have* to stop. |

| | | |
|---|---|---|
| Si | Stimulation, individual | The same distinction between the individual, local, and class unit as described under *Instruction* pertains to this section. |
| Sl | Stimulation, local | |
| Sc | Stimulation, class | |

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* Developed by Dr. John Pyper

| | | |
|---|---|---|
| Management | Any control message from the teacher, either verbal or non-verbal, that is intended to stop disruptive or inattentive behavior but is not necessarily related to the instructional content. (It is a desist technique.) | |
| Mi | Management, individual | The same distinction between the individual, local, and class units as described under Instruction pertains to this section. |
| Ml | Management, local | |
| Mc | Management, class | |
| Position change | Any major change in teacher's position which is required to control a disruptive group or individual. Do not include teacher change unless in connection with management or stimulation. (Pt) | |

STUDENT BEHAVIORS

| | |
|---|---|
| Disturbance | (Gross inattention or disinterest.) Any behavior of an S or Ss that indicates that they are definitely not paying attention to the instructional objectives. (Looking out a window does not necessarily mean the S is not paying attention to what is being said. Looking at the observers is not to be considered a disruptive event.) |
| Di | Individual disinterest. Inattention or disinterest of one S evidenced by specific attention being directed to an activity in conflict with instructional objectives (*e.g.* reading a book during a class discussion, counting holes in the ceiling, etc.) However amusing oneself during a discussion or teacher explanation is not necessarily disinterest. If there is any indication that the student is paying attention also to the teacher activity it is not to be marked as disinterest. |
| Dim | Multiple individual disinterest. Same as Di except there are different, separate, disinterested individuals. |
| Dl | Local disinterest. Disinterested or inattentive behavior by two or more students together such as talking to neighbor (about something other than the classwork), jabbing neighbor with pencil, etc. |

| | |
|---|---|
| Dlm | Multiple local disinterest. The occurence of two or more Dl's. |
| Dc | Class disruption. May or may not involve all members of class as initiators of disturbance but noise level or disruptive stimulus creates one of two conditions: (1) teacher is unable to communicate above noise level or (2) the visual observing response of the majority of the class are directed away from the teacher and toward the source of the disturbance. |

# APPENDIX E

## Explanation of Factors in Cognitive and Personality Tests

## Explanation of Factors in
## ETS Cognitive Test Battery

Speed of Closure: Gestalt Completion Test. Cs-1

The ability to unify an apparently disparate perceptual field into a single percept is tested. Drawings are presented which are composed of black blotches representing parts of the objects being portrayed. The subject writes down the name of the objects, being as specific about them as he can.

Syllogistic Reasoning: Inference Test. Rs-3

Tests the ability to reason from stated premises to their necessary conclusions. The task is to select the one of five conclusions that can be drawn from each given statement.

Induction: Locations Test. I-2

Associated abilities involved in the finding of general concepts that will fit sets of data, the forming and trying out of hypotheses. For each item, five rows of places and gaps are given. In each of the first four rows one place in each row is marked according to a rule. The task is to discover the rule and to mark one of the five numbered places in the fifth row accordingly.

Spatial Scanning: Maze Tracing Speed Test. Ss-1

Speed in visually exploring a wide or complicated spatial field. The task is to find and mark an open path through a moderately complex series of paper mazes.

Perceptual Speed: Identical Pictures Test. P-3

Speed in finding figures, making comparisons, and carrying out other very simple tasks involving visual perception. For each item the subject is to check which of five numbered geometrical figures or pictures in a row is identical to the given figure at the left end of the row.

Visualization: Paper Folding Test. Vz-2

The ability to manipulate or transform the image of spatial patterns into other visual arrangements. For each item successive drawings illustrate two or three folds made in a square sheet of paper. A drawing of the folded paper shows where a hole is punched in it. The subject selects one of five drawings to show how the sheet would appear when fully opened.

Ideational Fluency: Topics Test. Fi-1

The facility to call up ideas wherein quantity and not quality of ideas is emphasized. The task is to write as many ideas as possible about a given topic. The score is the number of separate ideas (phrases or sentences) written.

Figural Adaptive Flexibility: Match Problems. Xa-2

The ability to change set in order to meet new requirements imposed by figural problems. The task is to indicate several different patterns of matches that can be removed to leave a specific number of squares. Many set-breaking solutions are needed.

Originality: Plot Titles (clever). O-1

The ability to produce remotely associated, clever, or uncommon responses. The task is to write titles for story plots. The score of O-1 high, is the number of highly original titles written. O-1 low is the number of titles of low originality written.

## Explanation of Variables in the Edwards Personal Preference Schedule

1. Achievement (ach): To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.

2. Deference (def): To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise others, to tell others that they have done a good job, to accept the leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.

3. Order (ord): To have written work neat and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly, to make advance plans when taking a trip, to organize details of work, to keep letters and files according to some system, to have meals organized and a definite time for eating, to have things arranged so that they run smoothly without change.

4. Exhibition (exh): To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance, to say things just to see what effect it will have on others, to talk about personal achievements, to be the center of attention, to use words that others do not know the meaning of, to ask questions others cannot answer.

5. Autonomy (aut): To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in positions of authority, to avoid responsibilities and obligations.

6. Affiliation (aff): To be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships, to make as many friends as possible, to share things with friends, to do things with friends rather than alone, to form strong attachments, to write letters to friends.

7. Intraception (int): To analyze one's motives and feelings, to observe others, to understand how others feel about problems, to put one's self in another's place, to judge people by why they do things rather than by what they do, to analyze the behavior of others, to analyze the motives of others, to predict how others will act.

8. Succorance (suc): To have others provide help when in trouble, to seek encouragement from others, to have others be kindly, to have others be sympathetic and understanding about personal problems, to receive a great deal of affection from others, to have others do favors cheerfully, to be helped by others when depressed, to have others feel sorry when one is sick, to have a fuss made over one when hurt.

9. Dominance (dom): To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others as a leader, to be elected or appointed chairman of committees, to make group decisions, to settle arguments and disputes between others, to persuade and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.

10. Abasement (aba): To feel guilty when one does something wrong, to accept blame when things do not go right, to feel that personal pain and misery suffered does more good than harm, to feel the need for punishment for wrong doing, to feel better when giving in and avoiding a fight than when having one's own way, to feel the need for confession of errors, to feel depressed by inability to handle situations, to feel timid in the presence of superiors, to feel inferior to others in most respects.

11. Nurturance (nur): To help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favors for others, to be generous with others, to sympathize with others who are hurt or sick, to show a great deal of affection toward others, to have others confide in one about personal problems.

12. Change (chg): To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine, to experiment and try new and different things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions.

13. Endurance (end): To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late working in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work.

14. Heterosexuality (het): To go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex, to be regarded as physically attractive by those of the opposite sex, to participate in discussions about sex, to read books and plays involving sex, to listen to or to tell jokes involving sex, to become sexually excited.

15. Aggression (agg): To attack contrary points of view, to tell others what one thinks about them, to criticize others publicly, to make fun of others, to tell others off when disagreeing with them, to get revenge for insults, to become angry, to blame others when things go wrong, to read newspaper accounts of violence.

16. Consistency (con): Reliability of answering.